

The Mining And Metallurgical Journal

VOL. XVIII. No. 4

LOS ANGELES, CAL., November 15, 1897, SAN FRANCISCO, CAL.

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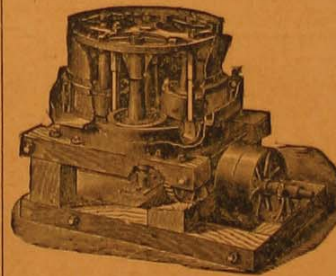
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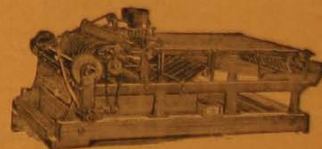
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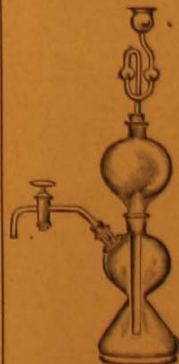
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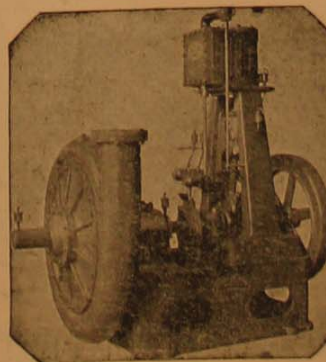
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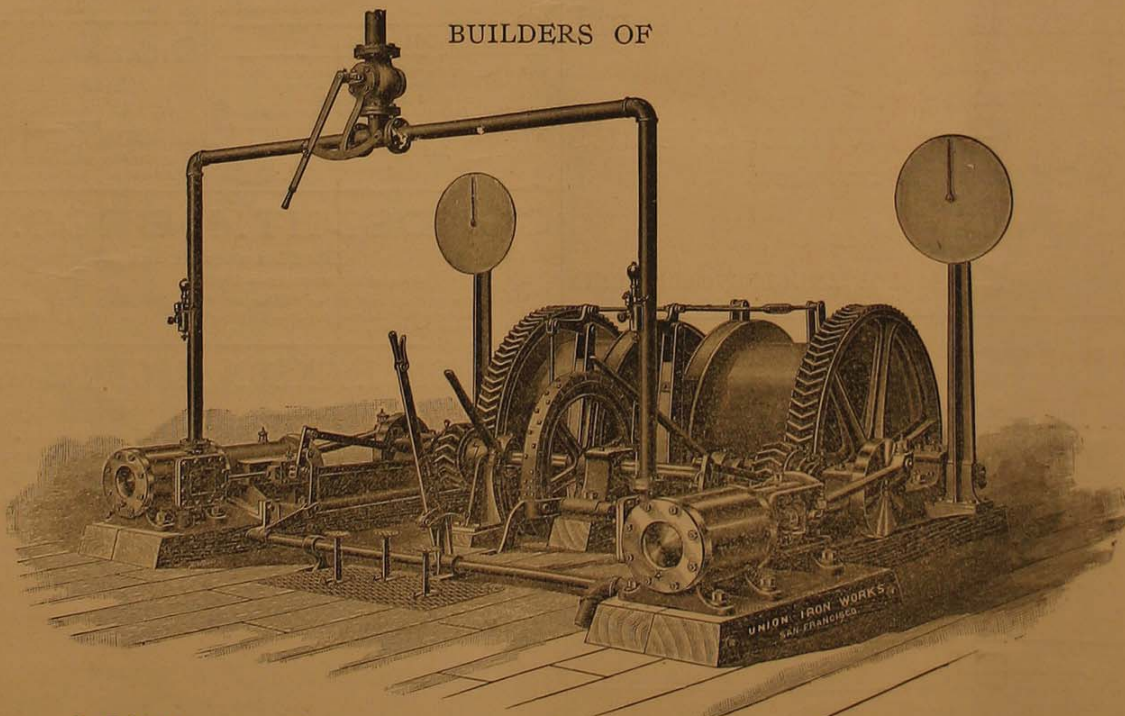
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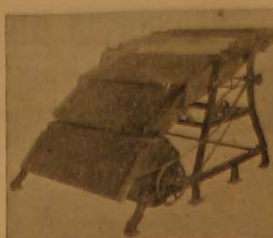
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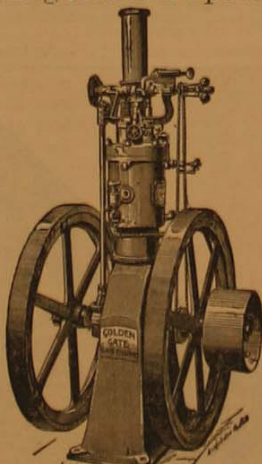
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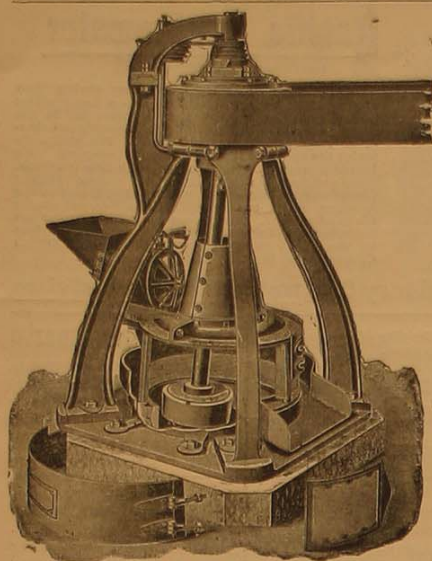
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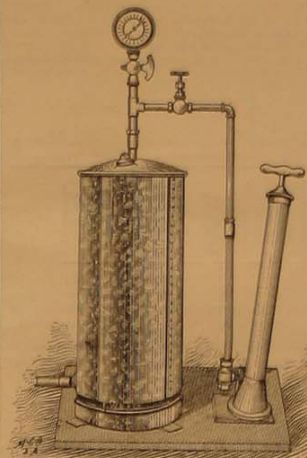
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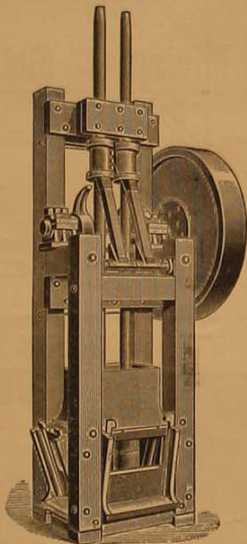
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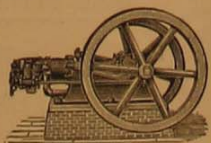
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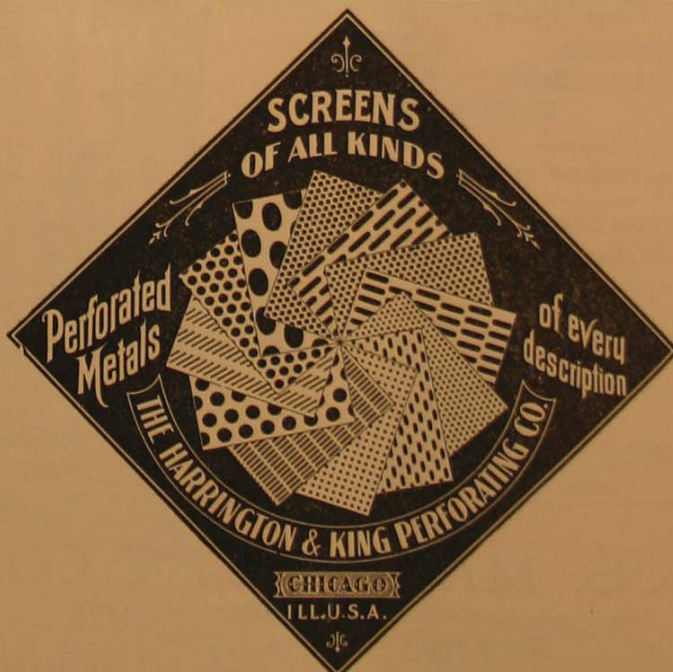
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JOHN STEWART,
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THE SIDE BOUNDARIES OF CLAIMS.

The recent attempt to have the side boundaries of mining claims changed to that of vertical lines produced downwards or in depth from the surface side lines of the claim, as was proposed by well-meaning but ignorant theorists, at the recent meeting of the State Miners' Association, was wisely nipped in the bud by the rejection of such an unwise proposal by the committee on resolutions.

Col. W. S. Keyes, the proposer of this amendment to our Federal Mining Law, is not to be downed, however, even in a lost cause, for in a recent issue of the *Mining and Scientific Press*, he says "That location by surface boundaries would not tend to monopoly," but, unfortunately for his case, that is just the effect it has in the mining districts of the east and those to the north of the Canadian boundary line. As the large majority of mineral deposits and veins pitch or dip from the vertical, the side line is soon reached and the vertical boundary line says that "thus far and no further shalt thou go." So the industrious miner has either to quit work or buy out the party who has purchased the adjoining claim as a speculation, and who holds a monopoly of the balance of the vein or deposit, which the industry of the miner has demonstrated to exist several hundred feet under ground, and, but for this work, would never have been known. Under the vertical boundary the work of the miner has developed a mine for a neighbor who has not spent a cent on the property. Can such a boundary be said to be in the interests of labor and capital invested in mines? It gives a monopoly to the owner of land who does no work, but waits the developments of industry in the adjoining mine.

A copper company in the east, where the vertical side line boundary prevails, worked a shaft which dipped with the vein, and also

with the slope of the hill on which it was situated, at about an angle of 45 degrees, and at 900 feet the shaft and vein passed beyond the vertical boundary of the property of 200 acres, into that adjoining. An employee of the company, who knew the facts in the case, secured a bond of the adjoining property in his own right, and forced the copper company into liquidation, on account of having reached the vertical boundary of their mine, and thereby was capital driven out of the country, and their industry had developed a mine at 900 feet underground and about 60 feet wide of ore, for a party who had not expended a cent on the work. Other instances can be quoted if necessary, all equally as unjust to labor and capital invested as the foregoing, and lawsuits for underground trespass and theft of minerals have been quite common under the vertical boundary. Such a boundary is not in the interest of capital, nor does it insure to the poor man the reward of his labor, or prevent his being dragged into court to defend his rights against trespass and theft, but it has left more abandoned and closed down mines as lasting monuments of its injustice and folly.

Colonel W. S. Keyes must have been told or read at some period of his life that there once was a soldier leader of the people, like himself, who was named Moses, and is reported to have been the first miner on record for striking a ledge and water and liquidating social difficulties, also, (with some assistance) he wrote a law as follows: "Thou shalt not steal," but vertical fence lines, above and below ground, have not prevented this good law being broken. It is a boundary in favor of the worst kind of monopoly that of stopping mining development and work underground, after a paying mine has been found. Surface boundaries often include within their limits other minerals than those which are operated, and thereby cause a monopoly, as they prohibit prospecting. It was one of the chief causes for the necessity of confiscation of all minerals to the governments in France and Germany, as it was the cause of monopoly, and will prove in time the chief cause of the American states and provinces in Canada, in the future for assuming control of the rich mineral inheritance, which is the birthright of the miner in the United States, and in allowing him to follow his vein or deposit developed by continuous mining work, and run parallel to the dip of his vein or deposit, irrespective of surface boundaries, which justly regulate surface conditions only, but is not a good underground or miner's boundary.

MINING DISPUTES IN LAW COURTS.

The keynote to the wail of discontent and complaint raised by Colonel W. S. Keyes at the late meeting of the State Miners' Association was occasioned by the conditions and dissatisfaction which existed in the West and on the Comstock lode in particular under the working of the first Federal Mining Act of 1866, and was consequently a rehash of old conditions existing under that act, and as it was amended by the law of 1872 the arguments presented and cases mentioned of law costs and litigation are at this date, of no force and effect, being chestnuts ancient and venerable. To resurrect such ancient history and apply it to the improved conditions and satisfactory working of the present law of boundaries, is a lame argument to advance with the intention of changing from a just and honest condition of mining development

underground where the miner follows the dip of the vein or deposit by continuous work in depth, and to attempt to force on him the farmer's surface boundary on the frail pretext that it would stop the necessity of settling mining disputes in the courts of law. The pernicious and idle custom of recourse to law courts and the support of an army of hungry lawyers, whose chief aim and object in court is to twist and distort the truth so as to gain a point of what they consider law, even at the sacrifice of the interests of justice in the settlement of questions which ought to be settled by a mining commission, composed of, say, a State Commissioner of Mines, who ought to be a mining engineer of long experience and high reputation elected by the mine owners of the State, and two other mining engineers not interested in the properties under dispute, each of the latter representing the interests of the contestants, is a form of arbitration among mining men which ought to give satisfaction and justice more easily and satisfactorily and at less cost, than under the present system in courts of law. It is our manner of administering justice between the contending parties that is at fault, and not the just miners' boundary, which should dip parallel with his lode or deposit when that departs from the vertical position, as the mineral occurrences do in the large majority of cases. In the event of an appeal from the decision of the first arbitration, the State Commissioner of Mines ought to have the power to call in two more mining engineers who are not interested in the properties, and the decision of the board of five ought to be final. Take the settlement of mining disputes out of the control of lawyers, and costly lawsuits will be a thing of the past. If Colonel W. S. Keyes and the few others who think as he does, that our present mining claim boundary is not as good as the vertical side line boundary of the East, which produces as many cases of law court disputes as does our Western conditions, will only unite in the interests of the settlement of mining quarrels by the mining men who understand the best interests of the mining industry, they will remedy the evil of which they complain. The chief evil of the vertical boundary is that it stops mining in depth by confiscating to another before discovery the mineral vein or deposit which the industry and capital of the prospector and miner have demonstrated to exist in depth, and as a consequent result of this unjust vertical boundary, the combined efforts of labor and capital is to be robbed of the just reward of its industry and discovery, and under it lawsuits are as frequent as under our Western conditions.

It is therefore in the line of the change of system of adjusting mining disputes, by taking them out of the courts of law and settling them by arbitration among mining men, that we require changes to be made in the interests of justice to capital and labor invested in underground work. To advocate a boundary that stops deep mining is to retard the mining development of this country and give a monopoly of the minerals already found to another owner, and is consequently an unjust law which encourages litigation and disputes and their settlement in courts of law, as recent history can demonstrate. The evil arises from our wrong system of administering justice, not from the action of the miner in being industrious in following the dip of a mineral vein or deposit underground, hence the necessity for settling mining disputes by arbitration by mining men and not by lawyers in courts of law.

CORRESPONDENCE

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TUOLUMNE MINES.

East Belt—The Lost Fox Group of Mines.

GRAPE VINE CANYON.

This fine property has changed hands; was purchased for \$14,000 cash, is now incorporated, capital stock \$100,000; \$40,000 will be expended on development and machinery. The veins are large; value, \$10 per ton. In the spring a 20-stamp mill will be erected which can be kept continuously crushing. A steam hoist will be immediately put up, so as to enable a main shaft to be sunk to a depth. Hitherto the explorations have been carried on by tunnels. These mines are so far the most easterly discovered. The formation is slate, quartzite and diorite; assays give as high as \$54 per ton.

THE MODOC.

This property has resumed active operations. The machinery now on the mine is being erected and everything put in shape for steady development.

THE NEW YEAR'S MINE.

This property is an extension of Providence. Machinery is now being placed on the mine. The prospects are most excellent. Work is being vigorously prosecuted.

THE YELLOW JACKET

group of mines are being run full-handed. The Dutch mine owners are interested; a first-class equipment is being erected; no money will be spared to place this group of mines on a dividend-paying basis. It is a rich mine, beyond any question, of very high grade ore.

In this section there are a score or more of good properties in full blast. It is a wonderful section of high grade rock. The output in a year or so will be enormous. Space will not permit me to enter into details. I will mention a few: Providence, Gladstone, Lady Washington, Eureka Consolidated (1500 feet deep), Bonita, Consuelo, Garfield, North Fork, Buchanan, Chapparral, Gold Hunter, Spring Gulch, Richards mine, Carlotta, Philadelphia, Columbus, Louisiana (just sold for a high figure), Laura, and North Star. All of these mines are working.

Soulsbyville District.

DRAPER MINE.

The superintendent is sinking a winze from the 300-foot level, now over 35 feet below bottom level; a good sized vein of very rich ore is found. A second steam pump is placed in winze, the water pumped being allowed to flow into sump in main shaft, and then raised to the surface by their main steam pump (a Knowles).

THE GOLD BUG MINE.

Their main shaft is being pushed downwards as rapidly as possible; a steam hoist is in position; ore of very high grade.

THE BLACK OAK.

This celebrated mine is waiting for water to start up their immense plant. All is ready as soon as water is turned on. They have a pressure of 500 feet, that runs hoist, compressors, mill, and cyanide process.

THE JUNCTION MINE.

The superintendent continues to take out high grade sulphurets that assay \$1500 and upwards; several shafts are being operated. This is a very valuable property.

Middle Belt.

THE GOLDEN GATE

have just completed a powerful hoist to sink main shaft to greater depth. This mine is a steady dividend payer. They have a 20-stamp mill; chlorination plant complete in every detail.

THE ESTRELLA.

The above mine is an old one, now reopened by present owner. They have struck a 30-foot ore body that contains free gold and a large percentage of fair grade sulphurets. It is incorporated. This mine is almost within the city limits of the county seat of Sonora—in fact, a portion of the property is within the city boundaries. Their prospects are as good as can be desired for the small amount of developments yet made, but they are of that permanent character that warrant a steady expenditure, which will undoubtedly result in a first-class paying mine.

THE GERRYMANDER,

southeast of the above mine, have just completed their mill; 2000 tons await to be crushed, and ready for the mill; main shaft is 250 feet deep; rock improving in depth as sunk on; vein ten feet in size.

OLD VIRGINIA MINE.

Work is suspended waiting for water to be turned on for power. La Estrella veins run through this property, which contains 54 acres of patented land. The gold is the purest in the world, that is found in this quartz mine; average fineness, 985° to as high as 988½, worth per ounce within a slight fraction of \$20.44. It is an incorporated company; stock can be still acquired by application. This property is considered very valuable; veins, of which there are many, run from two feet to seven feet and upwards. The mine is found within the city limits of Sonora, naturally most convenient of access. This mine will be thoroughly equipped with mill and chlorination works. The value is found in the sulphurets, which are of heavy percentage, high grade. Investment in this property is a safe and sure one, and can be recommended.

Mother Lode.

THE BELL MINE,

at Tuttletown, Great excitement prevails at this mine. A 60-foot ore body of payable ore has been cross-cut, eight feet of which runs very high in free gold. This property will be a great gold producer, goes without saying.

All the mines in this section are producing well. Mills are going up in all directions. The prospects generally around this old camp are really splendid. New townships are being laid out, hotels building—in fact, a general boom has struck this section.

The Sierra railroad has just laid its rails to Jamestown, which is 3½ miles south from Sonora. It is a flourishing mining town. The mines all around that section are actively working and in full blast. The outlook for a very large output of gold is assured.

ARGUS.

Antimony Mining.

The Aitken antimony mines, which recently commenced shipping ore in carload lots, are situated on the north side of Lone Pine Canon, seventeen miles northeast of Mojave, and about five miles westerly from the sixteen mile station on the Randsburg stage road in Kern county.

The property consists of four claims, all located on the same vein, which have been de-

veloped by shafts and surface workings for a distance of more than four thousand feet. In all of the different openings ore has been exposed varying from a few inches to two feet in thickness. The ore is a stibnite and assays from fifty to seventy per cent antimony-sulphide, and from \$3 to \$20 per ton in gold. At present prices of star antimony, ore carrying sixty per cent would have an approximate value of \$90 per ton, which, after deducting freight and smelting charges, leaves a very satisfactory balance to the miner. Shipments are made to San Francisco, where it is sampled, after which it is sent to the smelting works of Mathison & Co., Staten Island. It is the intention, as soon as arrangements can be made, to ship direct from Mojave, which would make a saving in time and freight, and also give the shipper the advantage of competition from other ore buyers in New York.

The mines were discovered and located in January last by George Aitken, an experienced miner and prospector, who at once recognized the value of the find provided ore could be developed in paying quantities. Working under many disadvantages this was finally demonstrated, and the mines are now in a condition to produce ore indefinitely as a business proposition.

The antimony camp is most admirably situated for economical mining, being convenient to wood and water and within three miles of the pine forests of the Pah Ute Range.

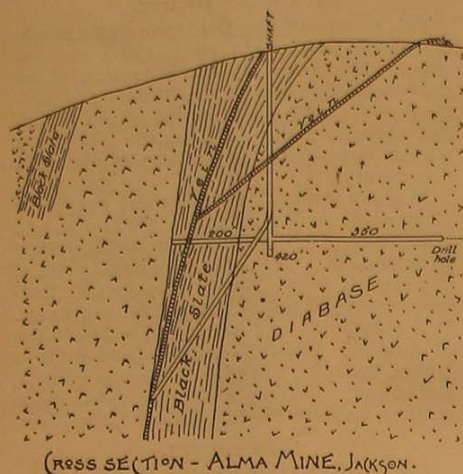
At present the ore has to be packed nearly half a mile to the wagon road, but a few hundred yards of grading will make a good road to the claims, which will greatly reduce the cost of hauling to the railroad.

There are probably no other antimony mines in the State which produce mineral of like grade and quality, being free from arsenic and iron pyrites, which the Caliente and Inyo county ores contain to a greater or less degree, being the prime factor that has made antimony mining heretofore unprofitable.

Although this is a new departure in the mining business, there would seem to be no reason, under careful and systematic management, why it cannot be made to pay a good profit, as antimony mines are by no means plentiful, and the refined product has a constant and increasing demand throughout the civilized world.

B.

The gilsonite found on the Colorado border, on the Uncompahgre reservation, is a shiny black, light hidro carbon, almost of the same chemical composition as asphaltum. It is found in veins having nearly a perpendicular dip. For pavements it is prepared by being first pulverized and mixed with petroleum oil. This mixture is then heated, care being taken to keep the temperature below 500 degrees Fahrenheit, as above that temperature gilsonite will decompose. The composite is mixed while heated with gravel or broken rock and is then ready for the street. The gilsonite is hard and brittle at ordinary temperature. It is used in the manufacture of black Japan varnish and for insulating compounds of various kinds. It is especially useful in covering iron plates on ships' bottoms, for a cement on brick or masonry walls, coating wire fencing, acid-proof lining for chemical tanks, for roofing pitch, preserving iron pipes, reservoir lining, coating posts, poles, ties, etc., covering and block paving and as a substitution for rubber in making cotton garden hose. It is also used for insulating electric wires, for which purpose it is excellent. It is used, too, in the manufacture of water proof cloth for mackintoshes.



SOME NOTED CALIFORNIA MINES.

(Extracts from State Mining Bureau Reports.)

While gold still continues to be by far our largest mineral product. The annual value of our non-metallic substances has now reached \$1,348,500; hydrocarbons and gases, \$1,404,500; and structural material, \$2,714,000. It is worthy of note that, in addition to the precious metals, there are 36 other mineral substances produced.

The attention of investors has not been attracted to any one particular section, but every gold-producing county shared in the general prosperity. The attention of prospectors and others directed to copper and its exploitation has been again becoming quite general. The outlook for Kern, San Bernardino, Riverside and San Diego counties is promising, and the last of the four boasts of having a mill (The Golden Cross) containing the greatest number of stamps (100) under one roof in the state, although the total plant (140 stamps) is equalled by the Utica-Stickle mill at Angels' Camp, Calaveras county.

Aside from Del Norte, Humboldt, Siskiyou and Trinity counties, where there are no restrictions on hydraulic mining, it has been presecuted in a very small way by many companies and individuals, but their production of gold has helped to swell the total in no inconsiderable degree.

ALAMEDA COUNTY.

In driving the tunnels on the land of the California Improvement Company, one mile north of Mill's College, gold is said to have been found in the basalt to the value of several dollars per ton; other than the above, information could not be obtained.

ALPINE COUNTY.

No active mining has been carried on in this county during the last three years. There are however three stamp mills, namely, Colorado, No. 2—a 20-stamp mill, with 600 pound stamps, and has a capacity of 40 tons per 24 hours. The Exchequer has an 18-stamp mill, with stamps of 700 pounds each, which has a capacity of 30 tons per 24 hours. The Pioneer, 10-stamp mill, has a capacity of 20 tons per day, with 800 pound stamps.

AMADOR COUNTY.

A general revival of interest in mining has noticeably affected this county during the past three years. Several new mines have been

opened, and numerous properties, after years of idleness, have been rehabilitated, and are in a fair way to become bullion producers.

Of all the prominent operations in progress, within the past few years, only a small percentage have suspended, while, in their stead, a score of new enterprises have been started. The county has other mineral resources than gold, but these are less important.

One of the most important mines in Amador county is the Alma, situated $\frac{1}{4}$ mile west of Jackson. We give herewith a cross-section view. In 1893, a three-compartment vertical shaft was commenced and sunk 420 feet. At 400 feet a crosscut was run west in the foot wall, for the purpose of intersecting a vein, the croppings of which appear upon the surface, 350 feet west of the shaft. In July, 1895, the crosscut had reached a point 300 feet west of the shaft, but no large vein had been encountered in the shaft or in the crosscut. The geology of the Alma is interesting, and the history of its development exemplifies in a marked manner the necessity of careful investigation of geological conditions before determining upon a plan of development. The hill upon which the Alma is located consists chiefly of granular diabase, through which runs a zone of black slate, about 200 feet in width. Failing to find a

continued to the hanging wall diabase. It was then determined to sink an inclined shaft, at an angle of about 61° , starting from the 350 foot level of the vertical shaft, and the shaft continued 375 feet on the incline, which point was reached about August 1, 1896. From twenty to twenty-five men are employed. The Alma Gold Mining Company, of San Francisco are the owners. John B. Francis, of Jackson, is the superintendent.

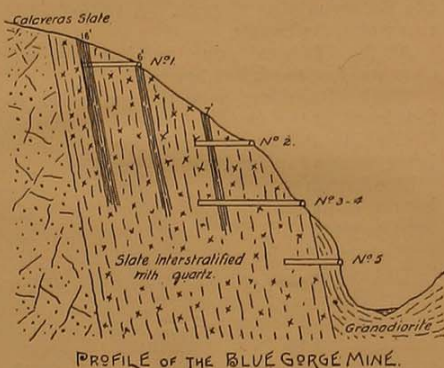
The *Amador Ledger* says: At Jackson, the reservoir is about ready for the water supply, and the pipe to convey the water to the mill commenced to arrive on the ground last week. It will take about three weeks to get everything in readiness for the operation. Frank Taylor, son of B. F. Taylor, who has been employed in the Angels foundry for some years will have charge of the mill.

I. T. Merrill, president of the Pocahontas Company, of Toledo, Ohio, is visiting in Drytown. While there Mr. Merrill has become impressed with the idea that depth is necessary to find mines along the mother lode, and has arranged for and had work commenced upon putting the Pocahontas' shaft down to 800 feet in depth. It is now down 400 feet.

BUTTE COUNTY.

Mining in Butte county has been steadily on the increase for the last two or three years. In 1896, statistics showed that gold mining had nearly doubled, both in the number of mines operated and the number of miners employed, and this year has had quite an increase, though to no such extent as last year.

There are now about a dozen stamp mills in this county, besides some eight or ten patent mills, arrastras, dry washers, etc. The following are the principal mills: Banner, 5 miles northeast from Oroville; Crystal Hill, which is 3 miles northwest of Enterprise; Crystal Peak in the same vicinity as Crystal Hill; Excelsior, 4 miles northwest from Inskip; Gold Bank, near Forbestown, about $\frac{1}{4}$ mile distant; Gold Summit, about 18 miles east of Powelltown; Matheson, some 5 miles from Nimshew; Pinkston, 10 miles east of Yankee Hill; Rainbow, which is about 4 miles west of Yankee Hill; Ramona, on the west branch of the Feather River, $1\frac{1}{2}$ miles south of Magalia; Spring Valley, near Cherokee; Catskill, located 1 mile northwest from Bangor; Clarke Bros.' mine, in the Conkow district; Edna M., (Old Buzzard mine) near



vein in the west country, a crosscut was run into the hanging wall from the 400 foot station. It passed a few feet through diabase and then entered the black slate, which is about 140 feet wide on this level. The vein containing low grade quartz was passed through in the slate belt, the crosscut being



Inskip; Owl, also in the vicinity of Inskip; Phoenix Gold mine, 3 miles south of Hurleston; Slate, one of Enterprise's noted mines; Standard Gold and Silver Companies' mines, near Oroville; Wild Yankee, owned by Salisbury & Bloomfield, of Inskip, which place it is near.

CALAVERAS COUNTY.

The long continued success of the great gold mines of Angels has done much to attract attention to this and Tuolumne county, and to establish confidence in the large gold-bearing veins found all along the great gold belt. Carson Hill, which three years ago was almost deserted, has again become the scene of active operations, and no less than a half dozen separate companies are now at work, reopening the famous mines which astonished the world with their richness in the early fifties.

The copper industry is improving very slowly. The mines at Copperopolis and at Campo Seco are idle, and the production of copper for the past few years is from the leaching of great ore piles. Generally speaking, the outlook for Calaveras is much improved.

There are at present in operation nearly 75 mills, including stamp mills, arrastras, patent mills, dry washers, etc., in Calaveras county. Among the largest which can be noted are the Calaveras Consolidated, of 20 stamps; Carson Creek, a 40-stamp mill; Esperanza, 20 stamps; Gold Cliff, 20 stamps; Ilex, 40 stamps; Lone Star, 20 stamps; Madison, 40 stamps; Quartz Glen, 20 stamps; Rathgeb-Union, a 40-stamp mill; Reserve also 40 stamps; Sheepbranch, 20 stamps; Sticle, 60 stamps, and the Utica at Angels has a mill of 80 stamps.

Assessment work done on the Esperanza gravel claim, in the Banner district, has developed a channel over 40 feet in width, with a depth of 6½ feet of picking gravel going \$2 and over.

The Banner Blue Gravel mine, near the Banner mill, on the Table Mountain channel, was bonded to Colorado parties last week for \$28,000, development work to begin immediately.

The Martin, or Table Mountain, gravel mine, near Sheep Ranch, is to resume operations on the 15th of the month.

The Page Cutting gravel mine, near El Dorado, has been sold, and a force of men are now at work thereon.

DEL NORTE COUNTY.

The copper deposits at Low Divide, and the extensive gravel beds at French Hill, Haynes and Big Flat are of great value. They will no doubt be worked to their utmost capacity in the near future, and furnish employment to many men. Hydraulic and placer mining is the chief industry of this county, though there are a few quartz mines.

EL DORADO COUNTY.

This county has long been famous for its rich mines. It is geographically located in the northern center of the state, abutting Nevada on the east, Placer county on the north, Sacramento county on the west, and Amador county on the south.

One of the most noted mines in El Dorado county is the Blue Gorge mine, located on Camp Creek, nine miles east from Pleasant Valley, comprising 13 mining claims, giving 6000 feet along the ore body, besides half a section of timber land contiguous. The veins strike northwest and southeast, and dip 75° east. About 400 feet of mineralized zone,

between Calaveras, slates on the east and grano-diorite on the west, is occupied by several parallel quartz veins, 7 feet 6 feet and 16 feet wide, separated between the main walls and each other by intervening slates and schists of partly chloritic and talcose character, interlaminated with small sheets and kidneys of quartz. The entire body is stated by the owners to be auriferous to the extent of a general average of \$2.50 per ton. They also state that the main quartz veins average \$7 per ton.

The ground has been exploited through six tunnels, crossing the formation: No. 1, below the outcrop, is 150 feet long. No. 2, 200 feet lower, 180 feet long. Nos. 3 and 4 are 150 feet still lower, and are on the same level, though 500 feet apart. They are 125 feet and 225 feet long. No. 5 is 150 feet below the preceding, and has penetrated 220 feet across the formation, and is being continued. No. 6 tunnel has been started on the same level as No. 5, but 800 feet farther south, and is in about 140 feet.

Water power, lumber and timber are convenient at the mine. Between 7 and 10 men are at present employed. John W. Mackey, of San Francisco, had a bond upon the property some time ago, but what he did could not be learned.

H. Sexton is at work on the Utah mine in the Kelsey mining district. A tunnel will be run and a shaft sunk.

At the Diamond mine, or Limpinsel, work on a 200-foot shaft has begun.

Work of sinking, from the 300 to the 400-foot level, at the Gentle Annie is completed.

The Big Sandy, in the Kelsey district, is being worked under lease by Jas. Kelley.

The Larkin property, near Diamond Springs, is transferred to the Larkin and Selby Mining Company, W. Larkin, superintendent.

There are in the neighborhood of 75 mines in El Dorado county that have mills, or some other class of reduction work upon their properties. The majority of these, however, are 10-stamp mills, though there are eight of 20 stamps; one of 30, one of 40, and another of 50 stamps. The Grand Victory stamp mill has 50 stamps of 1000 pounds each.

FRESNO COUNTY.

Mining of the precious metals is carried on to some extent in the foothills of the Sierra Nevada, while coal of good quality, gypsum, and petroleum are produced in the coast range. In and around Letcher is one of the best sections known.

The Copper King mine is located about 5 miles southeast of Letcher, on Dog Creek. The vein is 5 to 7 feet wide, and consists of a solid mass of chalcopryrite with a little zinc-blende, galena, and about \$5 in gold per ton. The dip is 40° east. The hanging wall is horn-blende schist, while the foot wall seems to be a dike altered to talcose slate. Near the surface, the vein is filled with hydrous oxide of iron.

The final payment was made on the Copper King mine, the middle of last July, by the English company who purchased the property. Since then they have steadily developed the property, and have 23 feet of ore at the bottom of the shaft, which is now down about 125 feet. The owners propose erecting a smelter in the near future.

There are something like 14 mills in this county which have a total capacity of about 140 tons per 24 hours. The Josephine mine has a 20 stamp mill, which has a capacity of 50 tons per day, with 900 pound stamps; the balance of the mills are considerably smaller.

HUMBOLDT COUNTY.

This county adjoins Del Norte on the south. It extends about 150 miles along the sea coast. Hydraulic mining is prosecuted on the benches and bars of the Trinity and Klamath rivers, and beach mining at Gold Bluff and elsewhere along the coast. No quartz mine of importance has yet been developed in this county.

In many places along the coast auriferous black sands are found, and in Del Norte and Humboldt counties they have been worked with success. The most important patch of pay sand is found between Aman and Redwood creeks, 6 miles south of Klamath River. It is 4½ miles long and embraces five claims as follows: Johnston, Lower Gold Bluff or Union, Ramona, Upper Gold Bluff or Pioneer, and Swan. Farther south, pay sands occur at Stone Lagoon, Big Lagoon and Little River.

INYO COUNTY.

During the last six months, there has been more development work carried on in this county than there has for years, though the county was one of the first counties in the southern part of the state to be prospected for gold. It is in the southern end of this county that the rich Panamint district is located. Inyo county is bounded on the north by Mono county and Nevada, on the east by Nevada, on the south by San Bernardino and Kern counties and on the west by Tulare and Fresno counties.

Among the most important districts are Snow's canon, Roble's canon, Hunter's canon, Big Pine, Lone Pine, Mountain Springs canon, Little Pine creek, and the Fish Springs district. There are nearly 45 reduction plants in the county, half of which are arrastras. Some twenty mines have stamp mills upon their properties, one of which has two Frue Vanner concentrators in connection.

KERN COUNTY.

During the last three years, the mining industry in Kern county has experienced a great revival. In the older camps, as White River, Kern River, Havilah and Caliente. The old mines are being reopened and operated by men with capital, and many of them have made steady producers, and others will in time.

Through the discovery of placer gold in Golen, Red Rock and Summit, which did not in themselves amount to much, the Randsburg district was discovered. The Randsburg range is a long, low ridge of hills in the desert, running north and south, and about thirty five miles long and three to six wide—(see our issue of March 15, 1897).

The Red Rock district lies in the hills bordering the Mojave Desert, 20 miles north of Mojave, at 2,300 feet elevation. Dry washer machines are used exclusively in this district, and are said to pay wages.

LASSEN COUNTY.

Mining is not a very important industry in this county, so that there can be but little said in regard to it. There are only some 14 to 16 mines in the whole county, nearly all of which are located at or near Hayden Hill, in the northwestern part.

LOS ANGELES COUNTY.

In and near Cedar Mountain mining district, there are eight or ten mines in operation. On Mount Gleason there are sixteen claims, and three miles northwest of Acton, a number of claims are being developed.

The Red Rover mine at Acton, owned by Henry T. Gage, Senator Stephen, M. White, Judge Ross, Judge Carpenter, and George

Denns, is taking out \$3000 in gold daily. The company is arranging to develop electricity on the Big Creek and bring it to Acton for running their ten stamp mill. Joseph Gilbert is the present superintendent.

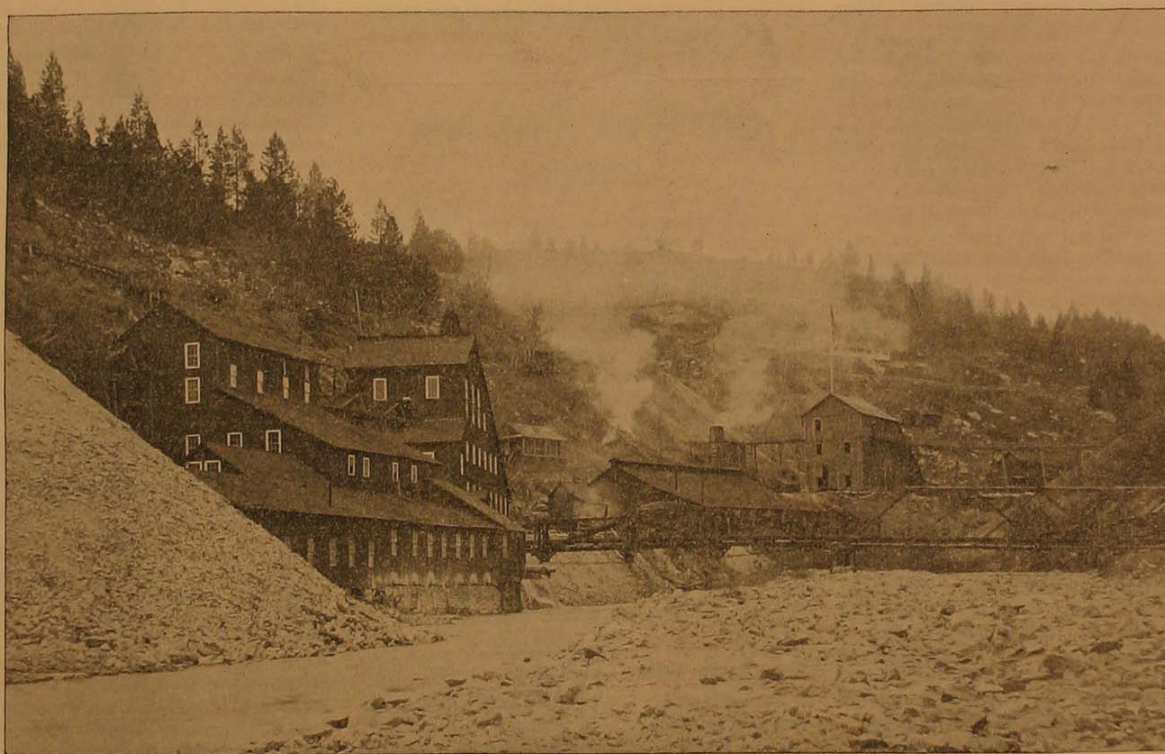
A most important deal was made last week when Dr. C. Edgar Smith, of this city, became owner of all the interests of the Golden Group Mining Company. This property is located about ten miles east of Acton, and consists of the Black Cat mine, that has a large quantity of good ore in sight that will pay well for working; also, the Gold Queen mine, from which a large amount of high grade ore has been taken. Besides these already mentioned, there are nine other claims, on some of which veins of ore have been uncovered, giving promise of rich returns. There is a Dodge mill on the prop-

MARIPOSA COUNTY.

This county has experienced a decided impetus in the mining industry. The reopening of the mines on the Cook estate, near Coulterville, has not only given employment to a large number of men, and infused new life into the community, but it has stimulated activity all over the county. The machinery placed upon the mines at Coulterville is of the finest and most expensive description. On the "East Lode," there is active prospecting, and attention is being attracted to these mines, many of which are high grade, and would pay handsomely if provided with better facilities. On the Mariposa estate, considerable prospecting has been done, and several promising veins have been discovered. Mariposa county has a large list of producers, there being 125 mines, but does not possess

MONO COUNTY.

Some of the oldest and best known mines in California are located in this county. It is located in the east central part of the state. In this county is located the noted Bulwer mine; the old and only Standard Consolidated, and Bodie, at Bodie; the Jackson and Lake View Companies' mines, five miles south of Lundy, and the old Mono mine, situated on the northern slope of Mount Scowden, which is now idle. R. G. Montrose, of Lundy, is the owner. Among the recently noted mines is the old Dunderburg, situated in the Castle Peak district, 12 miles south of Bridgeport. Here are seven claims on one vein running south from Green river and dipping at a high angle to the west. The claim upon which the developments have heretofore been confined lies in the middle, and a crosscut tunnel 700



CHAMPION MINE, MILLS AND FURNACE NEAR NEVADA CITY, CAL.

erty that will crush thirty tons of ore a day, a water right, controlling an abundance of water and more timber than can ever be used for timbering the mines and all buildings necessary for the employees.

MADERA COUNTY.

This county, while possessing a number of gold mines of undoubted value, has suffered a severe reaction in its mining industry of late years, by reason of ill-advised investments, or insufficient capital to complete necessary development, or to furnish the proper equipment of machinery. There are about 158 mines, only ten of which have stamp mills, though the Mammoth mill is of sixty stamps, with 850 pound stamps. There are three Huntington mills in operation and twelve arrastras.

as many mills as one would suppose. There are only 24 mills all told within the county, though some of them have 40 stamps. There are also four or five arrastras in operation at the present time. The number of miners employed is 556, according to recent statistics. This county is strictly a gold-producing section, as there is very little silver produced.

MENDOCINO COUNTY.

The mineral wealth of this county does not amount to much, and is even worse than Lassen county. Some coal beds, which are found on Fel river and at Round Valley, are probably the largest in the state. Copper is found in Eden Valley and near Ukiah, and chromic iron is known to exist in several localities. No mining, but only some prospecting on copper is being prosecuted in the county.

feet in, and 350 feet of drifts. These mines have been recently bonded from A. F. Bryant and reopened by Mr. Davis, a San Francisco mining man.

Ten men are employed at the Copper Mountain mine, tramway and mill. They are working night and day.

The Mill Creek placers, formerly worked by R. N. Graves, have been sold to A. L. Butterfield, of Lundy, for \$9,000.

NEVADA COUNTY.

In all essentials for making the business of mining profitable, this county is particularly favored. It has railroad facilities, water power, adequate timber supplies, good wagon roads and in the main mining center a most delightful climate. It is in this county that the depression which hung over the mining industry of the state a few years back was

raised. Foreign capital has been brought into the county during the past three years, and more is preparing to come, assuring business activity for the future, and an increased gold production.

The Allison Ranch Mining Co.'s mines are located in this county, on Wolf creek, three miles south of Grass Valley, and comprises sixty acres, including the Allison Ranch and Stanton mines. After a long period of inactivity this mine has been reopened. John W. Mackey has had experts examining the property lately, and it is probable that he will secure an interest in the same. The vein, about two feet wide, trends north and south and dips 33 per cent west in a grano-diorite formation. There were two inclines on the old mine. The north one was 700 feet deep, with seven levels, and the south one 300 feet deep connecting with the north shaft on the 300-foot level.

The Champion Consolidated mine is another well known property in this county, located on Deer creek, one mile west of Nevada City, and comprises over 23 claims. Four veins are included in this property.

A few years ago operations were suspended on account of legal complications, but the difficulties have been adjusted and work has been resumed. The three compartment main incline is $5\frac{1}{2}$ feet by 15 feet, and has been continued to 1,500 feet in depth. Large ore bodies are being stoped between the 1000-foot and the 1200-foot levels, and the drift extends over 850 feet north from the shaft.

A new five feet by eight feet shaft has been started and has reached 500 feet in depth. The crushing capacity has been increased by the addition of a new 40-stamp mill of 1000 pounds each, making seventy stamps in all. The Chlorination works have been enlarged from a three ton to a four ton capacity per day by the addition of extra vats. An electric light plant has likewise been added, consisting of a Westinghouse 110-volt dynamo furnishing 85 incandescent lights of 16 candle power. The working force consists of 125 men, Fred Zeitler of Nevada City, Superintendent.

This county has 62 mills, of three of which no data could be obtained. None, however, have more than forty stamps, except the one above referred to. The number of stamps all told is 672, a large number of which weigh 1000 pounds to the stamp. There are also some ten or twelve patent mills, arastras or dry washers.

PLACER COUNTY.

Increased activity in mining is noticeable in Placer county. In Ophir district nearly all the mines of prominence are being operated, and there are indications that others will be started up soon. On the Forest Hill Divide several new enterprises have been inaugurated, and new discoveries recently made in some of the leading old mines indicate the long continuance of active operations in them. East and southeast of Forest Hill Divide new companies are at work and are meeting with every encouragement. While a great deal of attention is paid to quartz mining, the majority of the mines in this county are drift mines.

Among some of the best known and largely developed drift mines are the Alta Gold Mining Development Co.'s mines at Alta, and comprises the Alta, Bradley & Gardner, Deep Blue, Erskine, Linn, and southeast quarter of Section 36. The main working tunnel is 2900 feet in length, and at 2400 feet taps a shaft 180 feet deep through which ventilation

is obtained. Formerly a water blast was employed. Three main crosscuts have been driven. One west of north is 120 feet long, and one southeast is 216 feet long, while the third is in a considerable distance; all three are in gravel. When breasting, thirty to forty carloads of gravel are broken per day, but the present work is of an exploratory nature. The gravel carries about sixty per cent of boulders and cobbles which are mostly stored in the mine. The wash-dump holds two hundred cars of one ton capacity each, with four hundred feet of flume set on a four-inch grade dropping into Canyon creek and using about ninety miners' inches of creek water for washing. Eight men are employed. J. E. Doolittle of San Francisco is the Superintendent.

There are twenty-seven stamp mills in Placer county, nearly all of which are run by water power. A few of these mills have concentrators. Besides the aforementioned there are three Huntington mills, one arastra and one Kendall process mill.

We will endeavor to give you a description of the principal mines in the counties not embraced by this article in another issue.

Miscellaneous Mining News.

ARIZONA.

A rich discovery has been reported in the Barbecue mountains, 65 miles south of Tucson, Arizona. Henry Harrison is the discoverer, and he says the ore assays \$62 in gold and 14 ounces in silver. The vein averages from 3 to 4 feet in width, and seven claims have been located along the ledge. There is a good mill site and plenty of water close by. Geo. Wheatley, the energetic mining broker of this city, has an option on the property.

OREGON.

W. S. James of Nevada has taken a bond from Jacob Kamm and J. A. McMasters on the Mollie Hill mine, Mt. Reuben district. Five thousand is the sum to be paid by Aug. 8, 1898.

The Black Butte Quicksilver Mines Sold.

Capitalists are about to purchase and develop the Black Butte group of quicksilver mines, sixteen miles from Cottage Grove, Oregon. Assays taken from these mines have run from 20 to 40 per cent. pure mercury, while some samples have gone as high as 70 per cent. It is claimed that there are in sight not less than 3,000,000 tons of ore. The new owners will at once begin work on an extensive scale.

A Smelter in Roseburg.

B. F. Pritchard of Los Angeles, Calif., intends to erect a custom smelter in Roseburg of about 35 to 50 tons daily capacity. This is a matter of great importance, and Mr. Pritchard has been written to for a definite proposition.

The Peacock Mine Sold.

Another important mining sale was made last week. The Peacock quartz mine passed out of the hands of Joe Hollenbeck, the Grant's Pass mining man, and J. B. Phelps, the Lakeview cattle man, and became the property of E. T. Steen. Mr. Steen is an old Nevada miner, but of late years made his

headquarters in San Francisco. This mine lies near Woodville, on the opposite side of Rogue river. It has been worked for several years by the late owners, Hollenbeck and Phelps, the ore being hauled to Woodville and thence shipped by rail to Ashland for treatment. The ledge is between two and three feet wide, and the ore, by frequent milling tests, is shown to be worth \$17.50 a ton. The development consists of a 75-foot shaft and about 300 feet of drifts. It is the general opinion that Mr. Steen has a good thing, and that he intends to utilize his advantages is shown by the fact that he ordered from a Grant's Pass mill last week 8,000 feet of lumber for use at the mill, and afterward left for San Francisco with the intention of purchasing a five-foot Huntington mill and ore-crusher for immediate shipment to Woodville.—*Oregon Mining Journal.*

Roseburg Notes.

The tunnel of the Roseburg Mining Company, on Brushy Butte, is now in about 150 feet, and it is thought that the vein will be reached in 10 or 15 feet more.

Robinson Bros. and H. M. Ostman have finished their 200-foot tunnel contract on the "Black Republican." They have cut through a number of very large stringers, but have not yet struck the main vein.

Mr. J. W. Cook, owner of the Music mine in the Bohemia district, states that he cleaned up \$30,000 in bullion and concentrates from the middle of May to Oct. 1st, with a five-stamp mill. He has put in wood and provisions for an all winter's run.—*Roseburg Review.*

UTAH

Among the other experiments that have been undertaken by Messrs. Mitche and Clonnel, who are in charge of the plant established by Charles Butters, the South African metallurgist, in the basement of the Dooly block, in Salt Lake, is that which has in view the profitable handling of low-grade gold ores that are found on the surface in many parts of Utah. The surface ores of Bingham have afforded an interesting study, and while the results of experiments are not to be revealed until the arrival of Mr. Butters, it is known that some very important ones have been achieved. Perhaps there is no portion of Utah where this low-grade gold ore is more abundant or where it can be more economically handled, this being demonstrated by the Niagara Company that a year ago made good money out of ore that showed a gross valuation of about \$4.70. It is understood that at the Butters plant it has been discovered that ore of the gross value of \$3.50 per ton can be made to furnish bread money. There is a large amount of similar class of ore to be found on Lion hill, and it is but a matter of a few years until all this class of mineral is made to surrender its value.

WASHINGTON.

Samples of probably the highest grade copper ore ever produced in the northwest comes from the La Fleur mines in the Boundary district, on the Colville Reservation, in Stevens county, being the properties of the Le Fleur-Comstock Consolidated Mining Company. The property has been known for 15 years, but, owing to its being within the

Indian Reservation could not be located and developed. On the opening of the reservation to the location of minerals in March, 1896, the ground was located by contending parties, one of whom did quite an amount of work, and held possession by force of arms also, after which work was suspended by an injunction from the courts. Recently, the contending parties reached an amicable settlement, a compromise was effected and a new company organized as above, which acquires all the interests of the contending parties, and has resumed extensive work on the properties, which will be pushed with vigor. The quantity, quality and richness of the ore is claimed to be sufficient to net the company about \$50 per ton above charges for freight and treatment. From 12 assays, made by six different assayers, an average value of \$95.85 was secured, the copper values alone running from 37 to 64 per cent, but also carrying lesser values in silver and gold.

An assay, yielding \$25,000 a ton of ore from a new discovery to the north of Mount Baker, still adds to the pleasure of the population of Bellingham Bay and Whatcom county generally.

The Sitka claim, located by Bert Ring, of Nelson, is located on the Colville reservation in Washington, although we formerly accredited it to British Columbia. The claim is reputed to be a valuable one.

FOREIGN MINING NEWS

BRITISH COLUMBIA

Mr. W. H. Fletcher, one of the locators of the Coronado, in East Kootenay, in an interview regarding that district, said: "I believe the East will excel the West. I am enthusiastic on that point, and I am sure I have reason to be. I have spent considerable time in the Fort Steele district, and have learned something of its resources. We know enough about that district even in its present undeveloped state to distinguish three distinct mineral belts. If we are after silver-lead claims, we know where to find them. If we are seeking copper mines, the region in which they are to be found is clearly defined, and if we want a gold mine of assured richness, there is a gold belt up there as yet scarcely touched by the prospector's pick. We have some great placer claims besides, and taking it altogether we have resources awaiting development which the West Kootenay does not possess. Give us the same amount of development and the same transportation facilities, and with all its wealth West Kootenay won't be in it with us."

Extensive tunneling work is proceeding at the Josie, a Rossland mine, as a result of which it is hoped shortly to recover the lead.

On the Porcupine mine at Ymir busy development work in tunneling and shafting has long been proceeding and is actively continuing. A recent assay showed \$16 in gold and 201 ounces in silver, and the owners are confident that they have a good property. As, however, despite fair facilities of access, they have decided not to ship till silver rises, it seems clear enough that the splendid assay noted was taken on exceptional rather than average ore. It is therefore of less value as a test of general capacity. What the public need are tests of the average or general ore deposits of a mine or claim.

Some East Kootenay Properties.

A winter camp is to be established on the Mitchell-Innes claim on Horse Thief creek and active development work prosecuted. A surface assay is stated to have shown \$80.13 in gold, silver and copper, the last metal predominating. The Channe Company is meanwhile pushing work on the Centaur claim, Fifteen Mile creek, but Mr. Watelet, the manager of the Bugaboo creek group of claims, has closed down work for the winter, after making a trial shipment of the ore.

Telephore Mercier, from Bugaboo creek, has completed development work on the group of claims owned by him and the Golden and Fort Steele Development Company. Several open cuts have been made and a tunnel has been driven 22 feet on the big galena lead. A large quartz and copper ledge has also been opened up, and Mr. Mercier reports that he has now fully 150 tons of ore on the dump and that with four men and proper appliances for furnishing timber, he would undertake to take out per day 20 tons of ore that could be handled at a profit. He brought down with him some splendid samples, also some 1000 pounds of ore in sacks. This ore will be shipped shortly for the purpose of having a smelter test made. The properties are situated on the divide between East and West Kootenay and within comparatively easy reach of the Duncan river, which is soon to be opened to navigation.

The Reported Le Roi Sale.

Colonel Peyton, of the Le Roi, denies the report that any negotiations are pending to sell the Le Roi mine, as previously stated in many quarters, for \$3,500,000 or any other sum. The directors' visit to London, England, is, he states, due to other considerations. Many, however, believe, nevertheless, that something important is about to happen to the Le Roi. Its directors are not likely to go to London for nothing.

Mr. A. H. Kelley lately brought into Nelson the largest specimen of ore ever seen there. It weighed over 3000 pounds. It was from the Dandy mine, owned by Mr. Kelley, on Toad mountain, and ran on an average \$80 in gold, silver and copper. The ledge from which it was taken is over five feet in width.

The Vancouver City Council has resolved to recommend to the taxpayers for acceptance the smelter proposal of the Rothschild syndicate of London, England, here at present represented by Mr. Symons, Q.C., says the *B. C. Mining Critic*. The company is to erect within five miles of Vancouver a smelter of 300 or 350 tons daily capacity. A small refining plant will probably also be added, and the company will no doubt provide for the smelting of both silver-lead and copper-gold ores. It is stated that electric power will probably be obtained from Seymour creek and that progress will be made on actual construction by June 1st next at the latest, by a company expending at least \$750,000 on the works and plant. The city taxpayers are in encouragement of the enterprise to take \$65,000 worth of stock in the smelter. The provisional acceptance of the offer means that the English offer of the Rothschild syndicate is preferred to the proposal of Mr. Remington, of the well-known smelter of Salt Lake City.

MEXICO

Durango.

The sale and transfer of the San Gonzalo mining and milling property, situated in the district of Panuco de Coronado, has just been concluded. This property consists of the San Gonzalo mine, situated near the town of Avino, a Frazer & Chalmers 10-stamp mill and lixiviation plant, and a large dwelling and store building in Avino. All are within eight miles of the San Gabriel station of the Mexican International Railway and 25 miles from the city of Durango. The purchasers are Messrs. Andy Evans, John W. Sharpe and William H. Mealy, of Mexico, and William Weir McKee, of Pennsylvania. These gentlemen secured the property for \$105,000. The new owners have already shipped pumping machinery from Monterey and ordered a steam hoist with a view of sinking as rapidly as possible. The capacity of the mill will also be increased to 75 tons per day. There are now on the dump about 3,000 tons of ore which can be profitably milled. The purchasers have incorporated as the San Gonzalo Mining and Milling Company, with William H. Mealy as president, and John W. Sharpe as general manager. The new company has also acquired the Enrique property, Avino mine, and the Santa Rosa and Sonoma properties, which are an extension of the Avino mine on the east. The Santa Rosa is now being opened up, and all of the mines will be soon, as the capacity of the mill can be increased sufficiently to handle the ore.—*Mexican Trader*.

Guerrero.

It is predicted that when the gold placer mining is developed in this state, more gold will be taken out than in the Klondyke region. Some placer mining is being done with excellent results and labor is cheap and water abundant, even in the dry season. One miner, an old Californian, reports taking out \$24,000 gold in May and his average is \$15,000 per month.

The Rundle Powder Thawer.



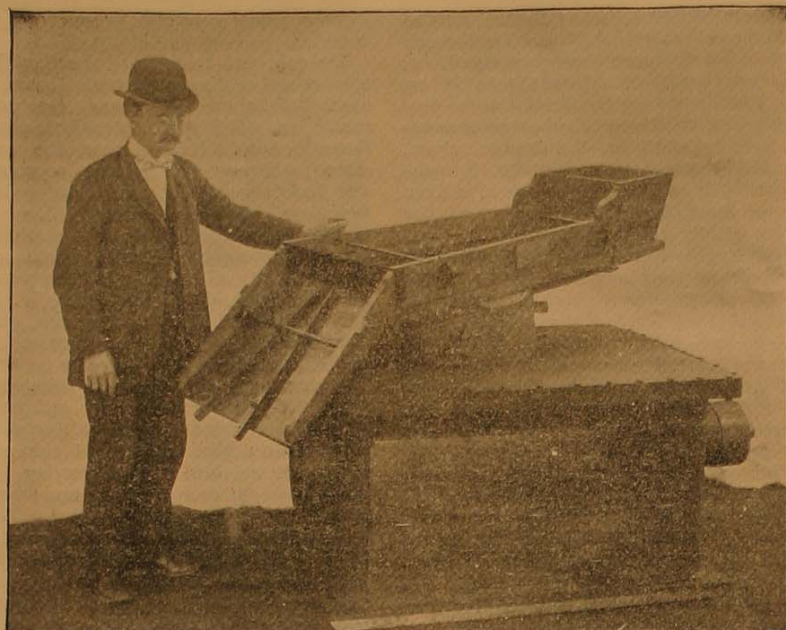
CLOSED.

by the Hendrie & Bolthoff Manufacturing Company of Denver, is one of the best patterns ever made.

Mr. Harry A. Lee, State Commissioner of Mines of Colorado, in speaking of this thawer says:

The Rundle Powder Warmer has been subjected to series of tests under conditions both favorable and unfavorable. As a result, I can most heartily recommend it to all consumers of nitro-powder compounds. It reduces the risks incurred to a minimum, and its universal use in accordance with the manufacturers' instructions would save the lives of many miners annually.

GENERAL NEWS.



THE HOOPER PADDOCK PNEUMATIC ORE CONCENTRATOR

DRY ORE CONCENTRATOR

The Hooper-Paddock Pneumatic Ore Concentrator is the result of long experiment and careful consideration of the problem of dry separation.

In dry separation, the ores must first be crushed, so as to produce as little fines as possible, then dried, and sized.

On top of the base is located a cylindrical neck made of adjustable iron rings fitted airtight. This neck supports the bed of the machine, and the angle at which the bed stands is practically universally adjusted by means of the rings composing the neck.

At one end of the machine is a hopper to receive the ore; at the other end is an apron with adjustable partitions.

The ore being fed into the hopper and the machine put in motion, the ore travels toward the discharge end. While on its way down, the intermittent puffs of air imparted to it agitate the ore on the bed, and the system of skimmers, together with the channel strips, separates the heavier from the lighter particles, conveying concentrates in an opposite direction to that of tailings, the line of demarkation being so plainly seen that the fingers on the apron may be easily set at points of division as it appears at the discharge end.

The machine makes a middling to be returned, which allows the operator to take off the heads or concentrates to any degree of purity desired, by adjusting the fingers or partitions of the apron. The tailings also are taken off containing less ore than can possibly be done by any machine not producing middlings.

It will treat ores as coarse as No. 10 mesh and as fine as will stand on No. 110 mesh screen.

The makers claim: First. That this machine will produce richer concentrates and poorer tailings than any other machine, wet or dry.

Second. The machines are adapted to suit different sizes of crushed ore; it is not necessary to crush the ore to suit the machines. No ores should be crushed finer than to obtain proper disintegration.

Third. One man can run several machines successfully, provided that the sized ore be deposited by the screens into bins located above the feed hopper.

Fourth. This machine is separating an ore successfully where the difference in gravity is so slight that it cannot be separated at all by panning, sluicing, vanning, or by any wet process known.

Ores containing different metalliferous material may be separated at the same time by using additional fingers or partitions on the apron to mark off the division at the discharge end.

The makers refer to the American Graphite Company, Ticonderoga, N. Y., and to the North River Garnet Company, North River, N. Y., as successful users of these machines.

The following testimonial, dated Sept. 16, 1897, was received from North River Garnet Company:

"We are using the dry machine to separate garnet from hornblende—the former having a specific gravity of 3.9-10 and the latter 3.2-10. Ore concentrates run over 90 per cent., which is a splendid result on such a hard concentrating ore."

The Ticonderoga Machine Company, Ticonderoga, N. Y., are the sole agents.

The Weber Gas and Gasoline Engine Company, of 437 Southwest Boulevard, Kansas City, Mo., report the following shipment made to the Squaw Creek country in Arizona, near Cañon, Yavapai county, of a carload of engines and a carload of pipe line. This shipment consists of—

One 38 h. p. engine to operate battery and electric light plant.

One 4 h. p. engine to operate concentrators and vanners.

One 6 h. p. engine to operate crusher at the mouth of the mine.

One 10 h. p. combined gasoline engine and triplex pumping plant, for furnishing mill water supply, pumping water from storage a half mile distant.

This machinery is for Mr. Biddle Reeves, who is opening several new mines there, and putting up a 10-stamp mill.

Work of the State Mining Bureau.

It is the intention of the State Mining Bureau to issue a register of the mines and miscellaneous economic minerals of California. It will classify the mines in their general nature as quartz, hydraulic, drift, placer and beach, and give the location and particulars of a public nature of each mine.

The register of quartz mines will contain the name of the mine, the nearest town, its location by section, township and range, the number by which it is designated on the accompanying map, and will state whether the mine is patented or not. It will give the strike, dip and thickness of the vein or veins, the general nature of the ore, and character of the foot and hanging wall, the number of men employed, and the name and address of the owner and superintendent. It will show the amount of development which has been done, by giving the depth of shafts, inclines, the length of tunnels, drifts, etc., and will also state the nature of power used. The register of hydraulic, drift, placer and beach mines, will likewise give their location and general nature of operation and development.

The register will also contain a list of quartz mills, reduction works, etc., with their character, size, location, and name and address of owner and superintendent.

The register of miscellaneous economic minerals, will give their location, general character and development, with the names and addresses of the owners and superintendents.

Accompanying the register will be published a map of each county, which is being compiled from the most reliable and recent available data. They will show, as far as can be ascertained at present, the location of railways, roads and trails, and general topography.

The mines will be designated by a red dot, and the number by which the mine may be found in the register. They are too numerous in many parts of the state to admit of their names being printed on the map, and therefore the reference number is used instead.

Where miscellaneous economic minerals exist, their names will be printed in full.

It is the purpose of the bureau to compile the information concerning the mining and mineral industry which it has accumulated into as simple and comprehensive a form as possible, and make it available for the use of the general public, by publishing a register of the mines and minerals, accompanied by county maps on which they are indicated. The information will be put in the best shape to be of use alike to the miner, business man and those engaged in all industries.

The information now at hand, vast as it is, is in many respects incomplete. In order to complete the register up to date as near as possible, a deputy will be appointed in each county whose ability and long familiarity with the mining industry of the county in which he resides will make his services most useful.

The mines of the state have become far too numerous to admit of anything like a satisfactory description of each mine in a single volume. The necessity of referring from one volume to another will be eliminated by the use of the register; and, by the aid of the accompanying map, the relative location of mines and mineral deposits may be seen at a glance, as well as routes of travel necessary to visit them. The location, trend, and gen-

eral character of mineral zones and groups of mines may be shown. The information tabulated in the register and indicated on the map may be easily revised from time to time, as is deemed necessary, and comparatively easily kept up to date.

One of the principal advantages claimed for the policy of issuing a register and maps is the advantage it affords as a basis for future scientific field work. That reliable maps are necessary as a basis for carrying on field work, especially in economic geology, is well known to all in any way familiar with the science.

As soon as conditions will permit, bulletins will be issued on the following subjects: chlorination, dry washing, beach washing, dredging, building stones, petroleum, lime-stones and cement.

Ready Rock Asphalt Roofing.

This roofing is made of the highest grade of California rock asphalt (nearly 90 per cent. fine), covering on both sides and thoroughly saturating a heavy Calcutta burlap. To this is backed (for convenience in handling) a firm rosin sized paper. The surface is then covered with carefully screened quartz gravel and rolled in, under pressure, making a uniform and beautiful appearance and a product that time and the elements will not destroy. The asphalt used contains no petroleum, and requires 250 degrees of heat to melt it, and insures a tight, strong fabric and a first-class roof.

To demonstrate what test it will withstand, the following letter received by the manufacturers may be interesting:

ST. LOUIS SAMPLING
AND TESTING WORKS,
St. Louis, Mo., May 21, 1896.

Ready Rock Asphalt Roofing Co.,
1006 North Main street,
Los Angeles, Cal.

Gentlemen:

We have made an elaborate series of tests of your Ready Rock Asphalt Roofing, exposing it for days to a temperature of 300 degrees F., and to strong acid fumes, as well as to alkaline waters, and find that, notwithstanding the severity of the test, the roofing still retains its qualities. Long exposure to a temperature of 240 F., while set at an angle of 45 degrees, produces but little movement in the asphalt or the layer of gravel. We can safely recommend roofing of the character shown in the samples submitted to us.

Yours truly,
ST. LOUIS SAMPLING
AND TESTING WORKS,
Wm. G. Potter, Mgr.

A few points of advantage may also be of interest.

1. Being fire proof it is very desirable for factories where burning coals, cinders, etc., fall from the chimneys.

2. Being a non-conductor of heat and cold it is the coolest in summer and warmest in winter.

3. It is easily and quickly laid and especially adapted for sloping roofs of less than one-half pitch.

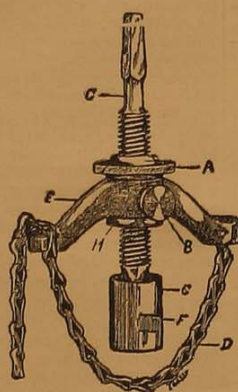
4. On flat roofs it cannot be excelled. Can be applied where gravel roofing cannot be used, as it will not run.

5. Buildings covered with this material are insured at the same rates as galvanized or corrugated iron, which fact alone is a sufficient inducement to consumers to use this roofing.

Postal Banks Needed.

At a recent meeting of the Indiana Bankers' association at Indianapolis, Mortimer Levering of Lafayette, recognized as one of the best financiers in Indiana, made an address on postal savings banks in which he said: "The government is in a position to manage this thing through its present post-office system, and will scarcely increase the expenses of that department, while it will enhance the accumulated wealth of the people throughout the whole United States. It was thought that building and loan associations would care for the savings of the masses, but people have become suspicious of them. It is well known that lawyers in Indiana are making as much as \$10,000 a year out of these institutions, and officers are making much money out of them. We all know that trust companies are not organized as eleemosynary institutions. We want a system of savings banks that are for the poor people. What greater pride could a man have than to think himself a depositor of the United States?"

Fifield Automatic Drilling Machine



Patented February 25, 1895.

This tool will be recognized at once as one of the most useful on the market. It will do a great many things that would require much time and expense in taking down and putting back if done on a drill press. It is much superior to the breastdrill as it requires no pressure by the operator to make it cut. The chain does that part of the work. It is Self-Feeding. Holes up to three-quarter inch can be drilled with ease, and no danger of springing the brace with lever or other heavy pressure often used by those not having one of these attachments. It will, in many cases, take the place of the ratchet drill, and can be adjusted ready for use in one-tenth part of the time. No miner should be without one of these tools. It will pay for itself many times in a year, as there is scarcely any drilling but can be done without removing the work. It is equally useful in fact to every man who has any occasion to drill holes in iron. For use in Rix brace by all classes of mechanics.

This tool is invaluable for mine repair shops, mill-wrights, machinists, plumbers, engineers, structural iron workers, and for general construction work.

Each machine is put up in a neat wood box to fit, size of which is three inches square by eight inches long, making a very neat package to place in tool chest.

This tool is made in a thorough manner, and runs on ball bearings reducing all unnecessary frictions to the smallest possible amount.

The mode of operating this device is very simple. In starting turn the spindle, G, back close to nut, H; pass the chain around the piece to be drilled, and draw it tight. The screw, B, is to adjust the feed, and should be loose when starting. Holding the hand under and against the wheel, A, at the same time turning the brace, will cause the drill to come into cut, when adjusting screw, B, can be turned down until the required feed is obtained. (See ad page 2)

We are in receipt of a bulletin of the Department of Mining and Metallurgy of the University of California, containing a treatise on the solution and precipitation of the Cyanide of Gold, by S. B. Christy, the Prof. of Mining and Metallurgy of the University of California, at Berkeley, California. A paper read before the American Institute of Mining Engineers, at the Colorado meeting, September, 1896. It is a neatly printed book, containing about 40 pages, printed on fine book paper, and is of infinite value to mining men.

PERSONAL NEWS ITEMS

HERBERT LANG, who was in the city some time ago, is now in the vicinity of Barstow, Cal., obtaining data for his proposed smelter in Minneola, twenty miles northeast of there.

G. W. TIBBETTS, the expert and ore buyer of Chihuahua, Mexico, is in Denver, Colo., on important mining business.

D. B. HUNTLEY, of De Lamar, Idaho, has been examining some mines and their operations in Utah and Montana.

R. C. CHAMBERS, the manager of the Ontario and Daly mines, at Park City, Utah, who was in San Francisco, Cal., returned to Salt Lake City, the other day.

W. C. RALSTON, of San Francisco, went to Boston to arrange for opening the Melones mine, in Calaveras county, Cal.

CLAUD SACHS, the noted mining man of Colorado, has visited the reported gold fields of Grand Encampment, Wyo.

The charge of the mill of the Colorado Ore Sampling and Reduction Company, at Arequa Gulch, Colo., has been turned over to W. B. Milliken.

CHAS. M. ROLKER, the mining engineer and expert, has experted some Mercur, Utah, mines, and will leave for England in a few days.

J. PARK CHANNING, of New York, has been making some examinations of mines in Utah recently.

EX-U. S. SENATOR STEPHEN W. DORSEY has returned from a trip to Europe, where he has been inducing English capitalists to invest in the Picacho Gold Mines Company, of Picacho, Cal., in San Diego county.

W. A. CLARK, the Montana millionaire mine owner, has gone to Sonora, Mexico, and will invest in some Hermosillo gold mines.

FRANK CAFFEY, of Sydney, New South Wales, has been investigating the mines of Cripple Creek, Colo.

J. W. BRENNING, of San Diego, Cal., was in the city the other day, enroute to the Klondyke gold fields. Mr. Brenning was well known in San Diego, and is a very pleasant gentleman.

MR. E. D. McDUFFIE, of the El Paso Foundry and Machine Co., of El Paso, and an old-time friend of the Editor, called on the JOURNAL, Nov. 12th.

J. A. YEATMAN, who is now with the Parke & Lacy Co., the San Francisco machinery house, was in the city the other day.

RICHARD EAMES jr., M. E., general manager, Columbia Smelting Co., of Crittenden, Arizona, has gone to North Carolina, for the purpose of making arrangements with his company for the erection of an additional smelter at Crittenden, and to examine mining properties in North Carolina.

CLARENCE S. KING, the noted mining expert, has again made his appearance in this city. Mr. King is one of the best informed mining experts in the west, and has the backing of considerable eastern capital.

A. H. WAGNER, the president of the Golden Slope Mining Company will leave for Victor, San Bernardino County, Cal., in a few days to look after their properties at Cactus Flat near Victor.

DR. C. EDGAR SMITH, who has considerable mining interest in this county near Acton, has recently returned from his properties with some samples of the ore.

Gold and Silver Exports and Imports,
New York.

For the week ending November 12th, 1897, and for years from January 1st, 1897, 1896, 1895, 1894:

Period	Gold Exports	Gold Imports	Silver Exports	Silver Imports
Week	\$21,892	\$55,374	\$556,648	\$48,969
1897	48,170,923	13,366,774	40,372,298	2,003,446
1896	40,603,343	74,963,615	32,784,681	3,419,250
1895	60,648,653	27,506,300	31,000,902	1,406,795
1894	85,481,315	15,265,654	30,059,140	1,556,608

The gold exported for the week went to London and the West Indies; the silver went chiefly to London. The gold and silver imported came from Central and South America and the West Indies.

MINING STOCK MARKETS.

LOS ANGELES, CAL., Nov. 15, 1897.

Comparatively little was done on the market during the past week, and prices remained unchanged. Work is being pushed as rapidly as possible on all the prospects, and the showings so far made are very encouraging. Most all the stocks are holding their own nicely, but there is a dearth of buying orders. Tone is slightly improved, and nearly all stocks appeal strongly as good purchases at this time.

Reports from the Wedge property continue to be very encouraging, and a new gasoline hoist and engine have been erected during the past week. Insiders are predicting that this stock will pay a dividend early in January, if not late in December; in fact, some are predicting a dividend as a Christmas present to the stockholders of this company. Still, with all these favorable indications, the stock refuses to move upward, and is selling lower today than it has for three weeks. The reason for this is hard to decipher.

In future, no stocks will be quoted on the Exchange unless they are regularly listed; any sales made in the unlisted list will simply be cleared for and posted, but not quoted in the regular Stock Exchange sheets.

SAN FRANCISCO, Nov. 12, '97.

The market has depreciated considerably this week. At the declining prices, margins were uncovered and considerable cash shares came out—thrown on the market by disgusted and nervous shareholders. In Alpha and Alta Consolidated, slightly better prices ruled. Best & Belcher and Belcher stock had quite a drop. No bids were received at

at all by Bodie. Bullion shares were selling this week at about one half their quotations last week.

From the Comstock mines, the news continues unimportant. There is no denying that the work in several mines which the public think is of consequence is developing them for future operations. Several levels continue to be blocked out which, in the due course of time, will show the wisdom of it, but it is not at all likely that when that time comes the assessment-ridden public will hold very few shares. In Utah the work is still westward, with nothing new reported. In Sierra Nevada west cross drift No. 4 got into very favorable formation. In Union the work is the same as heretofore reported.

In Mexican the work is confined to the 1000-foot level and does not indicate any desire to strike ore, at least for the present. The work in Ophir is still on the 1000-foot and Central Tunnel levels. Nothing new is reported from it either officially or privately. Active work is the order in Con. Virginia on the 1550-foot, 1650 foot and 1750-foot levels.

No work in Hale & Norcross. In Chollar they are still repairing the main incline below the 1100-foot station. In Potosi on the tunnel level the official letter reports active work.

In the Con. Imperial, Challenge and Confidence joint west crossdrift a large flow of water was struck; not being accustomed to it, the miners quit work until the 9th, when work was resumed again. It looks as if they are nearing the west, or gold-bearing ledge.

NEW YORK, Nov. 9, 1897.

Trading this week has been very dull. The Comstock properties have declined in price and assessments seem imminent, although heavy assessments have been numerous the last two or three weeks. The 111th assessment on Hall & Norcross has been postponed until December 28th. What designs the company have in levying so many assessments can not be ascertained; but designs they have just the same. Colorado stocks were not in particular demand, although some realized slightly higher prices, which is attributable to the difficulties existing on most of the Comstock properties. The California stocks were exceedingly dull. For the first time in many years, North Star was bid for on the Consolidated Exchange. Sellers of this stock quoted \$6, and buyers \$1 less. Of the

South Dakota stock, Homestake still retains its position of \$40. The October earnings have not yet been received but it is said they will amount to \$190,000. The extra dividend which was paid some time ago by the company has helped to sustain the price of stocks.

Ontario, in Utah, sold at \$4.50 last week, being a drop in price. Horn silver is quoted at \$1.65 against \$1.05 last week.

The market at the close remained much the same as at the opening, showing some fluctuations in prices on small sales and purchases.

ROSSLAND, B. C., Nov. 10, '97.

The summer is well nigh over at Rossland, and preparations for the approaching winter are being made on every side.

The mines in the north belt, the Jumbo, Le Roi, War Eagle, Iron Mask, Centre Star, Evening Star, Monte Cristo, Iron Colt and others are working steadily, and much progress is being made. A large body of ore was recently struck in the Iron Colt. Its discovery will go far towards placing that mine on Columbia and Kootenay mountains in the front rank of the foremost mines of the camp. A good strike, the extent of which is as yet not thoroughly known, has recently been made in the Evening Star. The Le Roi has fewer men working at present than it had some weeks past, but its staff is soon to be increased. It is yet the largest shipper of the camp. The War Eagle has been shipping some small quantities of ore for fluxing purposes, but the main body is being withheld, in accordance with the policy it has entered into in conjunction with some of its neighbors pending the solution of the transportation difficulty.

Returns from the twelfth car of ore lately shipped from the Great Western, of Slocan, owned by the two Friends Company, of Vancouver, have been received. This car consisted of concentrates, and weighed 16 tons, 1,011 lbs. It went 104.5 ounces of silver and 57.1 per cent lead to the ton, the net value being \$922.13, while duty amounted to \$282.73 was also paid.

The thirteenth car is now on the way.

SALT LAKE CITY, Utah, Nov. 11, 1897.

The tone of the stock market last week was excellent and orders were not confined to any one security, while as a general thing advances were noted.

In the listed stocks nothing was done until Galena was reached and after considerable sparring between the bulls and bears transfers in this security were recorded. Geyser-Marion, while inactive in the way of sales, was able to maintain former quotations and closed quite strong. Mercur sold in board lots at \$8.15, and while it is generally believed that this stock will gradually advance, the bidding was withdrawn to \$8.05 with offerings at \$8.25. Mammoth was also a favorite with the brokers and registered advances as well as sales. Northern Light while steady, was not a ready seller, and at the close was quoted at 52 cents bid and 65 asked.

The two Swanses attracted considerable attention during the call of the unlisted stocks, the former closing firm at \$1.60 in the bidding with \$2 asked, while the latter changed hands at \$1.25 and at the close had advanced to \$1.35 in the asking. Sacramento held its own at 25 cents in the asking, the bidding declining to 18 cents. Chloride Point continued a favorite buyer and seller being but a little way apart at the close. Hercules marked slight gains in the bidding while the stock was stiffer in the offerings. Dexter was practically unchanged.

S. L. BURBRIDGE,

CONSULTING

MINING AND METALLURGICAL ENGINEER

405-406 BAILEY BLOCK,

Mines examined and reported on.

SEATTLE, WASHINGTON

MICHIGAN COLLEGE OF MINES

A State technical school. Practical work. Special facilities for men of age and experience. Elective system. 45 weeks a year. Non resident tuition \$150 a year. For Catalogues, address

Dr. M. E. Wadsworth, Pres. Houghton, Mich.

*British Columbia Mines
and Mining stocks bought
and Sold on Commission.*

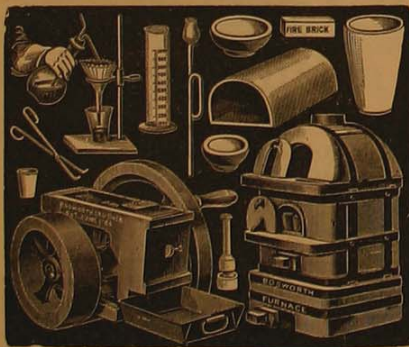
PERCY W. CHARLSON,

Vancouver, B. C.

F. C. GARBUTT

MINES AND MINING

Wanted—an Asbestos Mine, 420 Stimson Block, Los Angeles, Cal.

THE
Denver Fire Clay Co

Assayers' and Chemists' Supplies

MANUFACTURERS OF

Crucibles, Scoopifiers & Muffles

And all other kinds of

Fire Clay Material.

SPECIALTIES—Strictly c. p. Acids

Test Lead, Bone Ash, Cyanide

Potash, Argol, Borax, Borax Glass

Iron Sulphides, Litharge, Soda

Mining Fluxes, etc.

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Ainsworth Balances

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Gold, Silver and Lead Ores and Concentrates

Purchased at Reduced Rates for Treatment.

Selby Smelting and Lead Co.

416 MONTGOMERY ST., San Francisco

Consign Shipments to Vallejo Junction, Cal.

FAUTH & COMPANY,

(G. N. SARGENT),

Engineering and Mining Instruments,

WASHINGTON, D. C.

Attention is called to our newly improved Mining Transit, with best Solar Attachment and Vertical Sighting Telescope and Quick Leveling Head.

ASSAYER and CHEMIST

Mark samples plainly, advise by letter of full details, with charges enclosed. Postage on ore one cent per ounce.

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34 Roxwell Bldg.

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J. J. DUNRAVEN YOUNG, Director

1759 MONADNOCK BLDG., CHICAGO, ILL.

Courses in Elem Chemistry, Chemical Analysis, Fire Assaying of Gold, Silver, Copper and Lead Ores, etc. Ore Testing, including Mill Runs by Mercury, Cyanide and Chlorination processes. Individual instruction only. Open evenings. Opportunity for Miners & Prospectors

B. T. LLOYD

GOLD MINES,

Stocks and Bonds

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Salt Lake City, Utah

FOUNDRY

Mining Machinery

Iron and Brass Castings of all kinds, Shoes and Dies, Pumps, Engines, Boilers, Stamp Mills, etc., etc. Machinists and Foundrymen.

Standard Iron Works,

PHOENIX, . . . Arizona

A. Kratzmer

Iron and Brass Castings of all kinds, Shoes and Dies, Cams, Buses, Tappets, Mortars, etc., etc. Complete

Stamp Mills

of any size made and Sold at strictly

San Francisco Prices.

Correspondence Solicited.

BAKERSFIELD, CALIFORNIA.

Manufactured by the

Western Chemical Co.

Denver, Col.

For Chlorination Refining and other processes. Also Muriatic and Nitric Acids, Blue Vitriol, Copperas Refined Sulphate of Soda, Etc.

Sulphuric Acid

MINING STOCK QUOTATIONS

BOSTON	
Aetna Con	4 00
Allouez	—
Anacoda	—
Arnold	3 00
Atlantic	22 00
Bonanza	—
Boston and C. C.	—
Boston & Montal	13 50
Butte & Boston	20 25
Calumet & Hecla	45 00
Catalpa	—
Centennial	15 50
Central	—
Dominion Coal	21 50
Dominion Pref.	104 00
Franklin	—
Gold Coin	2 00
Humboldt	—
Illinois Steel	40 00
Kearsarge	17 00
Lake Sup Iron	—
Merced	4 75
Napa Cons	8 50
New Idria Mg	—
Old Dominion	20 25
Oscoda	34 50
Pioneer	5 06
Quincy	110 1/2
Ridge	—
San Isabel	—
Tamarack Jr.	—
Tamarack	126 00
Tecumseh	3 10
Wolverine	16 00

NEW YORK	
Alamo	03 1/2
Alice	40
Annetta	45
Best & Belcher	60
Brunswick	05
Bulwer	04
Crown Point	65
Con. Cal. & Va.	—
Cripple Creek Con	08 1/2
Deadwood	—
Favorite	11 25
Fortuna	04
Golden Fleece	45
Gould & Curry	45
Hale & Norcross	—
Hometake	29 50
Iron Silver	—
Mexican	30
Mollie Gibson	19
Ontario	4 50
Optimist	10
Plymouth	—
Quicksilver	3 00
Sierra Nevada	11 00
Union Con	1 60
Yellow Jacket	—

COLORADO SPRINGS STOCKS	
Alamo	03 1/2
Anacoda	48
Argentum Juanita	20
Bankers	04 1/2
Ben Hur	02 1/2
C. K. & N.	00 1/2
C. C. & Manitou	02
Creede & C. C.	—
C. C. Consolidated	09
Garfield Grouse	04
Golden Fleece	30
Gold & Globe	—
Gold Standard	03 1/2
Inley	300
Inslad.	04 1/2
Isabella	30
Iowa	—
Jack Pot	05 1/2
Jefferson	08 1/2
Mollie Gibson	23
Mount Rosa	—
Pharmacist	09 1/2
Portland	70
Peoples	02 1/2
Sacramento	02
Star of the West	—
Union Gold	22
Virginia M	02 1/2
Work	05

LOS ANGELES, CAL.

Brown Lake	—
Cavil	—
East Anacoda	009
Gold Bug	009
Laguna	50
Lucky Star	7 50
Magganetta	03 1/2
Mohawk Action	01 1/2
Old Dominion	—
Pacific Con	01 1/2
Rand Mt	02
Wedge	02 1/2

SAN FRANCISCO.

Alpha	09
Alta Con	05
Andes	27
Belcher	37
Best & Belcher	40
Bodie	08
Bullion	08
Challenge	30
Chollar	65
Confidence	—
Con. Cal. & Va.	1 00
Crown Point	30
Eschequer	—
Gould & Curry	34
Hale & Norcross	1 50
Justice	21
Mexican	—
Overman	80
Potosi	52
Savage	37
Sierra Nevada	66
Union Con	37
Utah	10
Yellow Jacket	38

SALT LAKE CITY

Alax	22
Alliance	—
Anchor	50
Bogan	—
Buckeye	01 1/2
Bull, Beck	3 50
Cent. Eureka	17 00
Chloride Point	45
Dalton	—
Daly	80
Daly West	3 25
Dalton & Lark	08
Dexter	1 35
Eagle	01
East Golden Gate	—
Eureka Hill	—
Four Aces	01 1/2
Galea	65
Gemini	—
Geyser-Marion	1 07 1/2
Grand Central	60
Horn Silver	1 45
Little Pittsburg	01
Lower Mam	40
Lucky Bill	—
Malvern	—
Mammoth	1 60
Maxfield	—
Mercer	8 05
Morgan	—
Northern Light	52
Omaha	—
Ontario	3 50
Overland	25
Richmond Ana	—
Rover	02 1/2
Sacramento	18
Silver King	14 75
Sloux Con	—
Sunshine	20
Swansea	1 60
Swansea	1 22 1/2
Utah	55
Utah Con	—

ROSSLAND, BRITISH COLUMBIA.

Alberta	05
B. C. Gold King	07
Beaver	10
Big Three	10
Bluebird	07
Bruce	10
Butte	05
Caledonia Con	05
California	15
Camp Bird	05
Centre Star	05
Colonna	20
Commander	18
Deer Park	12
Della Colla	03
Delaware	12
Enterprise	20
Eric	03 1/2
Evening Star	08
Georgia	15
Gerrude	12
Golden Drip	15
Great Western	12
Hattie Brown	10
Helen	03
Imperial	10
Iron Horse	20
Iron Mask	45
I. X. L.	10
Josie	05
Jumbo	70
Knight Templar	05
Kootenay-London	10
Le Roi	05
Lilly May	20
Mabel	15
Mayflower	11
Monita	19
Monte Christo	20
Morning Star	08
Nest Egg	02
Northern Belle	10
Novelty	09
O. K.	—
Palo Alto	05
Phonix	10
Poorman	10
R. E. Lee	15
Red Mount View	11
Red Point	15
Roseland, Red Mt.	12
St. Elmo	06
St. Paul	12 1/2
Silverline	05
So Cross & W. Con	20
Virginia	12
War Eagle Con	1 00
West Le Roi	20
White Bear	19

DENVER STOCK REPORT.

Aetna	003 1/2
Alamo	02 1/2
Anacoda	42
Arcadia	004
Consolidated	01 1/2
Argentum Juni	27
Is	02
Bangkok-C-Bell	02
Bankers	04
Ben Hur	02 1/2
Bob Lee	04 1/2
Boston & C. C.	01 1/2
Chimbarazo	002
C. K. & N.	006
Colo. C. & M.	01 1/2
C. C. Con	08 1/2
Elkton	92
Eureka	009
Garfield Grouse	04
Golden Fleece	25
Goldsmith	008 1/2
Gold Standard	02 1/2
Inaley	003
Iron Clad	02 1/2
Isabella	28 1/2
Jack Pot	04 1/2
Jefferson	08 1/2
Mollie Gibson	70
New Zealand	05 1/2
People's	01 1/2
Pharmacist	08 1/2

HELENA, MONTANA

Am Den & M Co.	1 00
Bald Butte	2 50
Helena & Frisco	8 00
Iron Mountain	—

Bi-Metallic	—
Combination	—
Con T & P 'm'n.	35
Diamond Hill	—
Merrill	—
Ontario	—
Yellowstone	11

MEXICO

Name of Company	State	Price
Alhazna	Hidalgo	\$ 5
Amistad y Concordia	"	24
Angustias	Guanajuato	210
Aravalo y Anexas	Zacatecas	210
Asturiana y Anexas	Durango	300
Barradon y Cabras	Hidalgo	100
Bartolome de Medina	Zacatecas	20
Cabezon y An	"	160
Candelaria de Pinos	"	20
Candelaria de Panuco	"	80
Candelaria de Chalch	"	120
Capuzaya	Durango	350
Carmen	Hidalgo	90
Castellana y San Ram	Tepic	10
Cerro Colorado	Chihuahua	280
Cinco Senores y An	Guanajuato	650
Concepcion y Anexas	S. Luis Potosi	250
El Oro	Guanajuato	40
Eparanza y An	Mexico	1,300
Guadalupe	Guanajuato	180
Hunilla	Santa Ana	100
Luz de Borda	Michoacan	40
Luz de Maravillas	Hidalgo	200
Pabellon	Zacatecas	150
Palma	"	5
Purissima de los Com	"	900
Real del Monte	Hidalgo	3
Refugio y Va	Durango	80
Restauradora	"	50
Rosario y Anexas	Hidalgo	270
San Francisco	"	100
S. Fed. Chalchihuites	"	825
San Rafael y Anexas	"	400
do, Free Stock	"	20
San Rafael del Oro	S. Luis Potosi	730
Ste. Maria de la Paz	Durango	80
Sirena	Hidalgo	400
Soledad	"	250
Sorpresa	Guanajuato	40
Trinidad	Puebla	27
Tlaxiungo	Hidalgo	250
Union	"	15
Zaragoza	Vera Cruz	100
Zemelahuacan (gold)	Guanajuato	15
Zona Min de Pozos	"	15

NOTE—The above Mexican stocks are figured on the basis of Mexican silver

Lacy Manufacturing Co.

Manufacturers of

Steel Water Pipe, Well Casing, Oil Tanks and General Sheet Iron Work,
Irrigation Supplies, Steel Water Pipe for Hydraulic Purposes

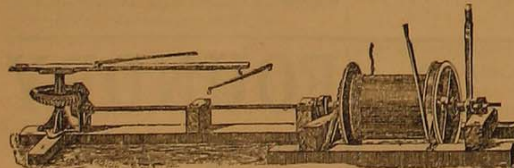
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Successors to the San Francisco Tool Co.'s Mfg Dept., builders of **Engines and Centrifugal Pumps** for Mining and Water Works. These pumps can be operated by horse power, water power steam, gasoline or electric motors.

Horse Powers!



Horse Power Mine Hoist.

also manufacture Cyanide Tanks and Centrifugal Sand Pumps for filling and discharging them. The Pumps work the tailings to perfection and are made to handle small or large quantities.

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J. B. TOMLINSON, M. E.

Prescott, Arizona.

MINING PROPERTIES EXAMINED, AP

PRAISED AND REPORTED UPON

— AND —

Supervision taken of the development of prospects and the operation of mines.

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Assayers Materials,
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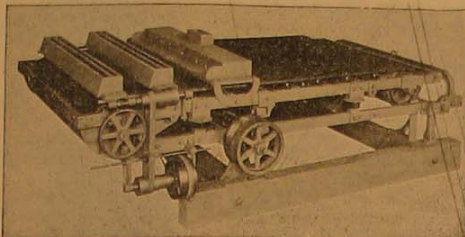
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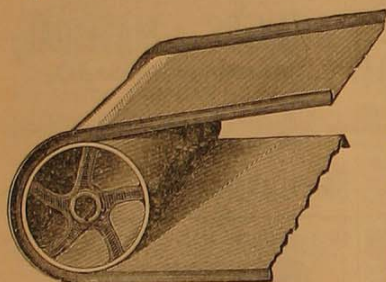
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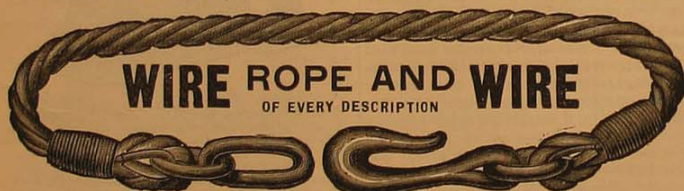
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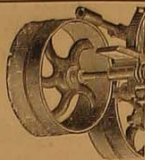
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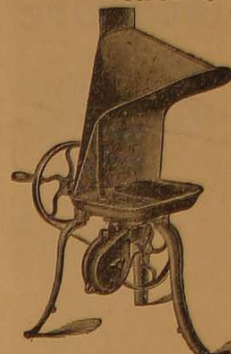
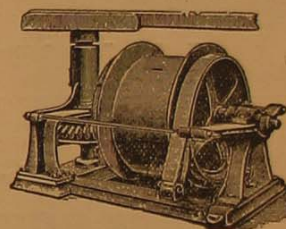
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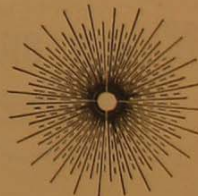
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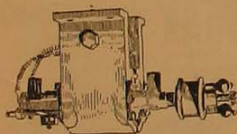
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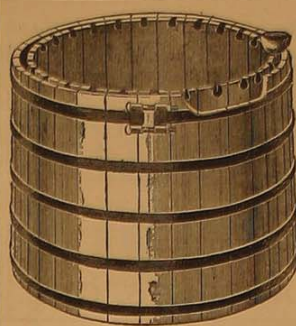
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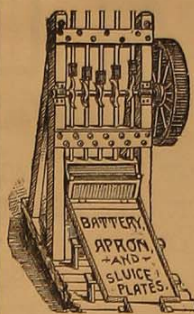
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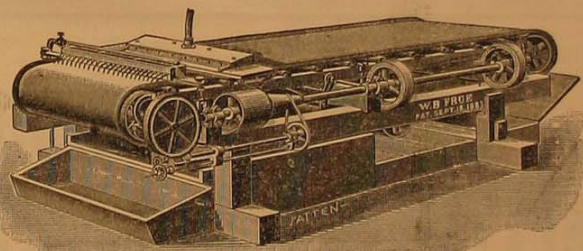
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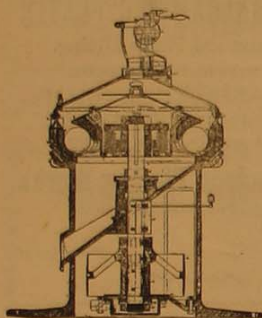
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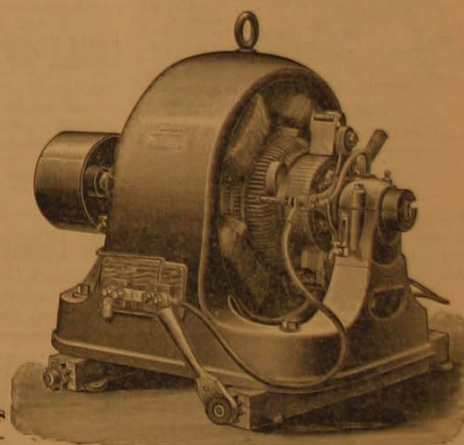
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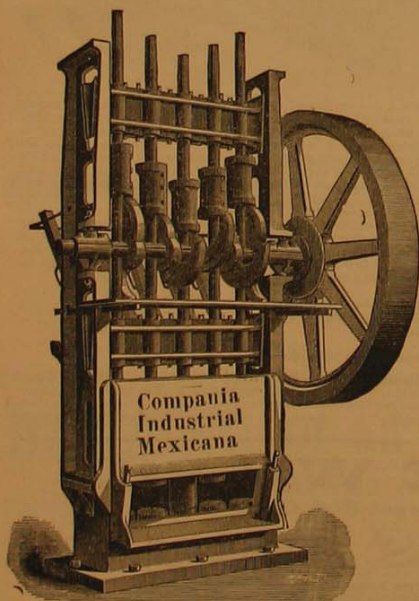
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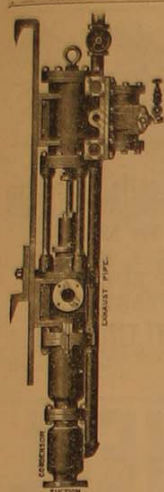
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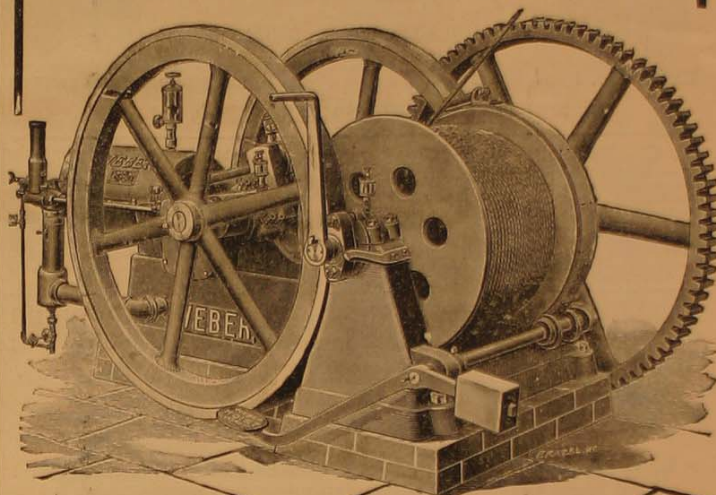
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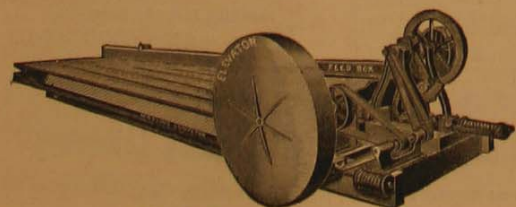
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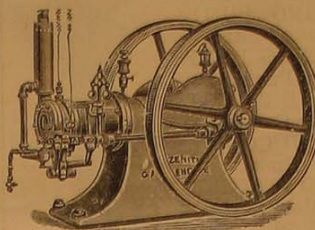
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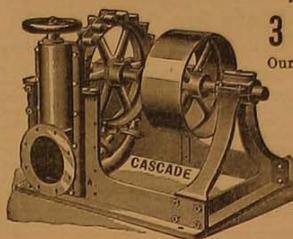
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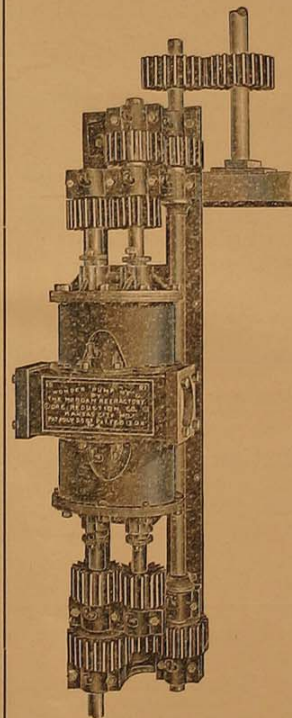
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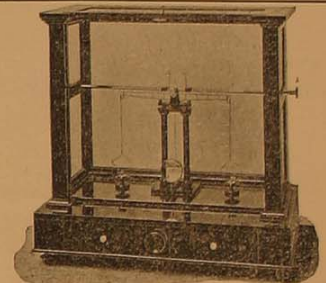


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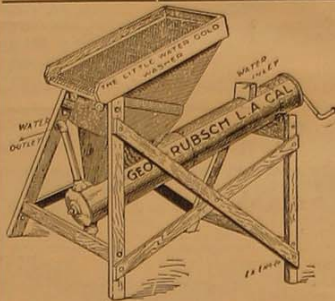
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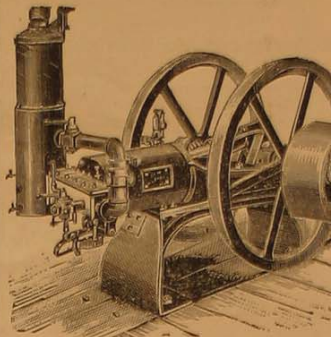
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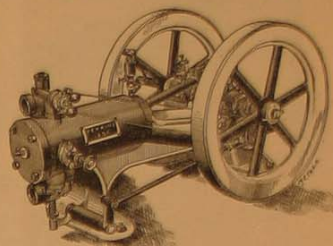
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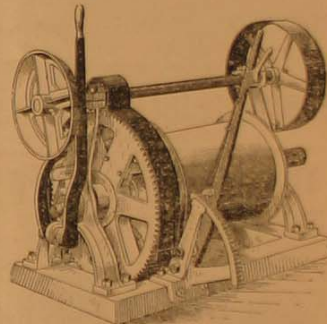
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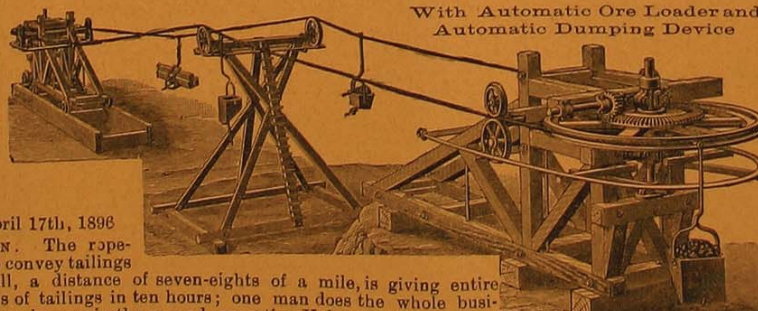
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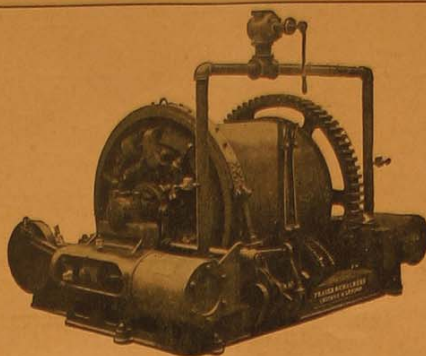
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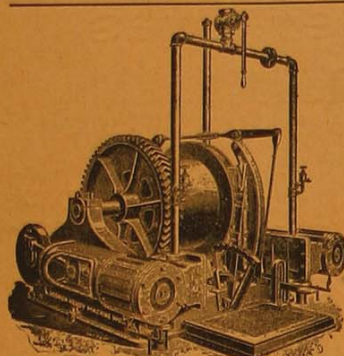


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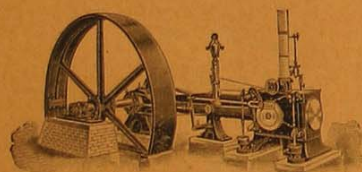
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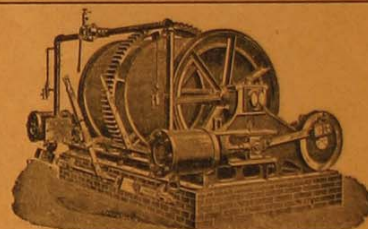
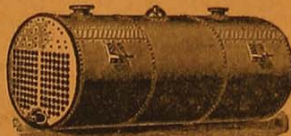
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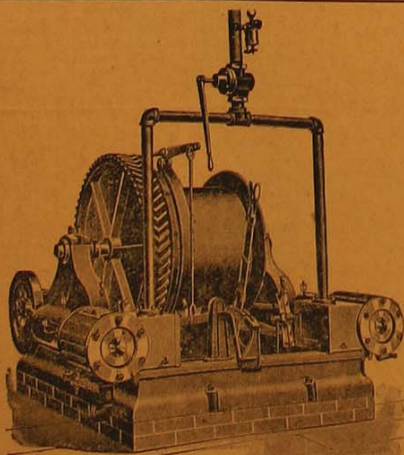
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THE ROPP STRAIGHT LINE FURNACE, For Roasting, Chlorinating and Desulfurizing Ores.

WE CARRY IN STOCK

Horizontal, Vertical and Portable Engines and Boilers. Rock Breakers, Cornish Rolls, Pulverizers, Concentrators, Ore Feeders. Hoisting Engines, Horse Power Hoisting Whims, Water Wheels, Steam Pumps, Ore Cars, Wire Rope, Ore Buckets, Water Buckets, Skips. Blowers and Exhaust Fans, Shafting and Pulleys, Belting, Oils and Mine Supplies. Maganese Steel Shoes and Dies

Estimates Furnished for Complete Plants for Hoisting Works, Smelters, Concentrating and Stamp Mills.